COLORADO
Department of Transportation
Office of the Chief Engineer

Stormwater Compliance
4201 E. Arkansas Ave., Suite 262
Denver, CO 80222.3400

November 22, 2016

U.S EPA Region 8 NPDES Enforcement Unit
1595 Wynkoop Street
Denver, Colorado 80202-1129
Attn: Stephanie DeJong (8ENF-W-NP)

Dear Ms. DeJong:

Please find attached, CDOT's third submittal in response to the audit of our Municipal Separate Storm Sewer System (MS4) permit, number COS000005.

CDOT continues to make significant progress with resolving the alleged corrective actions and recommendations identified in the audit report dated November 5, 2015. The attached submittal includes input from our Audit Division and provides an update on our progress as well as a summary of our actions to date. We have attached the following:

- Attachment 1, Summary Table: A summary table showing our past and current responses, corrective actions status, and our planned next steps for each of the remaining, outstanding corrective actions.
- Attachment 2, Program Management/Resource Assessments: The Program Management attachment describes CDOT resource assessments that CDOT committed to complete.
- Attachment 3, Construction Program: The construction program describes the progress being made on the corrective actions and on Design-Build projects and chronic non-compliance by contractors.
- Attachment 4, New Development Redevelopment (NDRD) Program: The NDRD program attachment describes the progress of the Permanent Water Quality (PWQ) Maintenance Resource Assessment, the PWQ Program Assessment, and the inventory, maintenance, and procedures of CDOT's PWQ Facilities.
- Attachment 5, Training Program: The Training program attachment describes the process for the entire water quality program. CDOT developed the training program to proactively prevent recurrence of EPA Audit Report Corrective Actions as well as other water quality training needs that CDOT has identified as being critical for MS4 program implementation.

If you have any questions, comments, or additional requests please contact Rick Willard by email at richard.willard@state.co.us or by phone at 303-757-9343, or Tom Boyce by email at tom.boyce@state.co.us or 303-512-4053.

Sincerely,

Joshua Laipply, P.E.
Chief Engineer/Director of Stormwater Compliance

Attachments

CC: Nathan Moore, CDPHE
Lisa Knerr, CDPHE
Debra Perkins-Smith, CDOT
Jane Hann, CDOT
Tom Boyce, CDOT
Rick Willard, CDOT
Jim Ballard, Audit Division, CDOT
Jean Cordova, CDOT/CDPHE
Stephanie Gibson, FHWA

Attachment 1: Summary of Past and Current Actions.

EPA Finding Number – Title	CDOT Response December 11, 2015	CDOT Response April 11, 2016	CDOT Response September 28 2016
Program Management - PM			
1PM – The MS4 program appeared to lack adequate resources and equipment for Maintenance and Regional staff to maintain permanent water quality features (PWQFs) and conduct future Pollution Prevention inspections at maintenance facilities. Corrective Action: Conduct a review of stormwater management program resources and provide 1) the stormwater management program resources review, 2) what additional resources, if any, are needed with a timeframe for obtaining them, and 3) a plan to ensure adequate resources are provided in the future for both personnel and equipment.	**Status**: Planned Will conduct a review of Stormwater Management Program resources (personnel and equipment) to determine present and future resource requirements. CDOT will provide a time table to EPA and CDPHE for acquiring these resources.	**Status**: In Process Resource Assessment In Process – Will detail in a later deliverable.	**Status**: In Process Actions: Three resource assessments are in various stages of development. Specifically: • The first resource assessment for Headquarters Statewide Water Quality Management Program has been developed and presented to executive management, which was approved for Transportation Commission consideration. • The second resource assessment is under development for each of the 5 regions. The initial information has been collected and a resource assessment has begun. • The third resource assessment is for the statewide Permanent Water Quality (PWQ) maintenance. Initial information is being collected and a cost assessment tool is under development. Next Steps: • This first resource assessment for the program management will be presented in the fall quarter to the Transportation Commission (TC) as an increase funding request. • Prepare resource assessment strategy for the regions and present to executive management for review, strategy decision, and approval. • See 4ND for Resource Assessment description.

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2PM – CDOT Headquarters and Regional staff are not consistently aware of the requirements in the Stormwater Management Programs, and the Stormwater Management Programs are not being consistently implemented. Corrective Action: In addition to corrective actions in 4PM, 2CS, 3CS, and 1ND, ensure that CDOT HQ and regional staff are trained on the requirements of the MS4 permit and associated CDOT programs. Ensure staff implement these programs and provide EPA and CDPHE a summary of how CDOT plans to accomplish this. Recommended Action: CDOT to develop a self-audit and corrective actions program to ensure this program is consistently implemented through the regions.	**Status**: Planned/ In Process Planned: Will ensure Headquarters and Regional staff receive training on MS4 permit requirements and associated CDOT programs once revisions to the Standard Specifications are made and approved. Specifically, this training will address: 1) Permit Boundary determination 2) MS4 Permit requirements, 3) Construction General Permit requirements 4) Current (and soon to be changed) CDOT Standard Specifications for Road and Bridge Construction (Standard Specifications) and 5) Permanent Water Quality Procedures. In Process: CDOT is in the process of developing a self-audit and corrective action program which will be part of our Environmental Management System (EMS).	**Status**: In Process Training Development In Process – Will detail in a later deliverable. Self-audit process being developed – Will detail in a later deliverable.	**Status**: In Process MS4 training program development is underway, the training program approach for the MS4 Program and Gap Analysis has been completed, and the self-audit process is being developed. Actions: 1) Training: Completed: Standard Operating Procedures (SOP) were developed to provide the Headquarters program managers and staff a reference guide and process on how to develop training programs. A CDOT MS4 training curriculum has been developed. In Process: Specific training handouts and other instructional materials are under development. The specific training classes that address this finding include: • CDOT MS4 Programmatic Training- Provides training on MS4 compliance requirements for all MS4 programs. 2) Self-Audit: In Process: The CDOT Water Quality Unit has conducted water quality training sessions with internal audit staff members. An audit program guide is under development. Next Steps: • Complete MS4 Training materials. • Schedule and deliver training • Finalize Audit Program • Conduct Self Audits
3PM – CDOT has not ensured training for staff on requirements of the MS4 permit and associated CDOT programs. Corrective Action: Ensure CDOT personnel receive adequate training and information to implement the MS4 Program. Submit a roster of who has received this program training, and describe how CDOT intends to ensure MS4 employees receive training.	**Status**: Partially Complete/ In Process/ Planned/In Process: CDOT will provide a training log of those attending the training to EPA and CDPHE. CDOT will evaluate the existing training programs to identify where it does or does not address the MS4 Permit (issued 7/28/2015) program requirements. Existing trainings will be modified to address any gaps identified and new training will be developed as needed.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, CDOT already provides regular safety training. Training Program Development In Process: including training strategy and the training gap analysis– Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, CDOT already provides regular safety training. Complete: As discussed under 2PM for this submittal, the training program approach for the MS4 Program and Gap Analysis has been completed. Actions: Training: Specific training handouts and other instructional materials are under development.

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Recommended Action: It is recommended that safety training be provided as part of any MS4 program training, if it is not already.	Complete: CDOT already provides regular safety training.		The specific training class that addresses this finding include: • CDOT MS4 Programmatic Training - (See 2PM for description) • Stormwater Management Plan Preparer class is being finalized and will address how to design a good SWMP. Next Steps: • Complete MS4 training materials. • Complete SWMP Prep training materials • Schedule and deliver training
4PM – The Permit boundaries were unclear to several CDOT personnel. Corrective Action: Review the Permit boundaries in which the MS4 requirements apply. Provide adequate training to ensure the MS4 Program is implemented within all Permit boundaries. Recommended Action: MS4 boundary within OTIS may also need to be updated to be in compliance with the Permit coverage area	**Status**: Partially Complete /In Process Complete: The MS4 boundaries within CDOT's Online Trans Info System (OTIS) are already current and in compliance with CDOT's recently expired MS4 permit and the newly issued MS4 permit. MS4 Permit boundaries are reviewed and updated as necessary in OTIS. At the time of the EPA Audit, the MS4 boundary was current. In Process: Training regarding the MS4 boundary information will be provided.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, the MS4 boundaries within CDOT's Online Trans Info System (OTIS) are already current. Training Development In Process – Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, the MS4 boundaries within CDOT's Online Trans Info System (OTIS) are already current. Actions: Training: Specific training handouts and other instructional materials are under development. The specific training class that addresses this finding include: • CDOT MS4 Programmatic Training - (See 2PM for description) Next Steps: • Complete MS4 Training materials. • Schedule and deliver training
Illicit Discharge Detection and Elimination Program - ID			
1ID – CDOT does not have adequate legal authority for illicit discharges, as required to have been submitted with CDOT's permit application Corrective Action: Submit to EPA and CDPHE a summary of why CDOT had adequate legal authority and individually address A-F in the permit application requirements above, or indicate how and when CDOT will obtain such adequate legal authority.	**Status**: Complete Complete: CDOT has adequate legal authority. Specifically, Part 2 of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit Application for CDOT summarizes this legal authority. Details on A-F were provided in this response letter that quoted from various subsections from 40 Code of Federal Regulations 122.26, and from Colorado Revised Statutes, Title 43. Additional Safeguards Being Added: In Process: IDDE training will be modified to add reference to CDOT's legal authority for	**Status**: Complete Complete: As detailed in a previous submittal, CDOT already has adequate legal authority. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: Complete Complete: As detailed in a previous submittal, CDOT already has adequate legal authority. Additional Safeguards Being Added: Training: The specific training class that addresses this finding include: • Illicit Discharge Training - Slight modification to existing training class to address legal authority to eliminate discharges into CDOT MS4 system to improve enforcement of discharges with legal consequences. Next Steps: • Complete MS4 Training materials.

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	MS4 Illicit Discharge Detection and Elimination Program		• Schedule and deliver training
Construction Sites Program - CS			
1CS – The [208.09] Standard Specifications do not require stop work orders to be issued for discharges to state waters or other egregious non-compliance instances [because the word "may" instead of "will" is included in the language, and it does not require a stop-work order for discharges to state waters or other egregious non-compliance instances]. Corrective Action: [Although] CDOT's new MS4 Permit, issued in 2015, does not require a stop work order in specific instances, [EPA implied they would still like to see this stop-work order requirement implemented through specification changes.]	**Status**: In Process CDOT is in the process of updating the Standard Specifications to reflect current MS4 Permit and/or MS4 Construction Program requirements. The word "may" in the new specifications to be released has been changed to "will" regarding the issuance of a stop work order under the circumstances outlined in this finding. In addition, this change will be supported through a memorandum from the Chief Engineer to emphasize the CDOT Regulatory Authority process to CDOT staff and the need to impose these Stop Work Orders when Liquidated Damages are insufficient to correct the non-compliance.	**Status**: Complete Complete: CDOT has issued the updated Standard Specifications for Road and Bridge Construction to change "may" to "will" as discussed in this finding. These specification changes are reinforced by a Chief Engineer Memorandum, conveying the importance of their implementation as our MS4 Regulatory Authority and that Project Engineers interpret existing contract language of "may" as "will" and shall issue liquated damages and/or stop work orders on all active construction projects that failed to correct findings within 48 hours after being identified or for discharges into state waters. A CDOT Construction Bulletin was issued on March 29th, 2016, that incorporated these changes. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: Complete Complete: As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction to change "may" to "will" as discussed in this finding. Additional Safeguards Being Added: CDOT recognizes that training on these changes is necessary to ensure proper implementation of these changes. 1) Training through Communication: New Specification Changes are being communicated through numerous means. Have taken this message to various engineering meetings, Water Pollution Control Managers are communicating with individual projects as needed, and this message went out through CDOT's Change Agent Network that includes representatives from all the regions and HQ. 2) Training through Classes: Specific training handouts and other instructional materials are under development. The specific training classes that address this finding include: • Transportation Erosion Control Supervisor (TECS) Certification – Although already developed, this construction projects class on administrative and field compliance is being modified to include new program changes resulting from this EPA audit. • Water Quality and Erosion Control Specification Training (208 & 107.25) - Provides a focused overview of current and new water-quality-based specifications.

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			Next Steps: • Communicate spec and program changes at the Transportation Conference on Feb 28/March 1 2017. • The use of liquidated damages/stop work order is being added to the CDOT ESCAN tracking system and will be reported quarterly to Executive Management. • Complete MS4 Training materials. • Schedule and deliver training
2CS – CDOT failed to ensure compliance with the Construction General Permit, enforce according to the Standard Specifications [aka Green Book], and implement sanctions for chronic failures at design-bid (sic) projects. [assuming Design-Build projects] Corrective Action: CDOT's new MS4 Permit issued in 2015 no longer incorporates the Construction General permit by reference. Update and implement the Construction Sites Program to ensure CDOT required contractors implement the requirements listed in CDOT's new permit. Recommended Actions: CDOT develop an alternative enforcement structure that provides additional pathways to enforcement escalation including oversight of Project Engineer (PE) decisions by the Water Quality Control Manager and does not rely only on the PE. CDOT should evaluate its design-build process to determine why these projects tend to have more problems, and address the root cause(s).	**Status**: Planned As clarification: CDOT only has Design-Bid-Build, Design-Build or Construction Management General Contractor projects. CDOT will incorporate specific contractor requirements by updating specification 208 of the Standard Specifications and will also include this update, and other new MS4 Permit requirements in the Construction Program Descriptions Documents (PDDs) that are being updated per our new MS4 permit implementation schedule. CDOT will review its alternative enforcement structure that provides additional pathways to enforcement escalation and process for design-build projects. Additionally, CDOT will review what is causing these types of projects to have more problems with compliance.	**Status**: Partially Complete /In Process Complete: CDOT has issued the updated Standard Specifications for Road and Bridge Construction. (See 1CS for description) In Process: CDOT is still reviewing process improvement for design-build projects – Will detail in a later deliverable. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction. Complete: In this submittal, CDOT developed two Design-Build training modules for environmental compliance to train internal engineers regarding environmental risk. CDOT also participated in a national peer exchange led by FHWA regarding lessons learned for Design-Build projects during the week of September 19, 2016, and will evaluate relevant changes in guidance. Actions: 1) New MS4 Construction Program Development: The MS4 Construction Program is being re-developed to include MS4 Permit requirements as described in this EPA Audit finding. The result will be an MS4 Construction Compliance Program Manual that will include Standard Operating Procedures. 2) Design-Build CDOT is doing an evaluation of the Design-Build process for MS4 compliance improvement ideas. Next Steps: • Complete the MS4 Construction Program development and capture this revised program in the Program Description Document.

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			• Complete evaluation of Design-Build improvement ideas for MS4 compliance. Additional Safeguards Being Added: Training: Specific training handouts and other instructional materials are under development. The specific training class that addresses this finding includes: • Construction Program Description Document (PDD) and SOP Manual Overview and Compliance Training - Provides training to regional CDOT water quality personnel on CDOT MS4-Construction Program to ensure compliance and uniform execution. Next Steps: • Complete MS4 Training materials. • Schedule and deliver training
3CS – CDOT failed to follow the Green Book [aka Standard Specifications] procedure for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions that went beyond 48 hours. Corrective Action: Follow the Green Book [208.09 Spec] procedure for construction sites by issuing and collecting liquidated damages for corrective actions that go beyond 48 hours. Indicate in a response how CDOT plans to ensure this is achieved.	**Status**: In Process A Chief Engineer's memorandum is being prepared for distribution to CDOT's Project Engineers that will provide additional direction on CDOT's regulatory authority process and will be provided to EPA upon its completion.	**Status**: Complete Complete: CDOT has issued the updated Standard Specifications for Road and Bridge Construction. (See 1CS for description) Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status** Complete Complete: As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction. Additional Safeguards Being Added: Training: See response for 1CS - Communication and training of these new specification changes, and response for 2CS PDD training. Next Steps: • See 1 CS and 2CS for Next Steps
4CS – CDOT has no formal mechanism to address chronic noncompliance by contractors as long as corrective actions occur within 48 hours. Corrective Action: Update the Green Book [208.09 spec] to include a process to address chronic noncompliance by contractors even if corrective actions are always completed within 48 hours. Ensure there is an infrastructure in place to track	**Status**: In Process The Construction Program and 208 specifications are being updated. The new MS4 Construction Program will include an escalation process and will address chronic noncompliance by contractors and associated frequency of MS4 Compliance Inspections described in the new MS4 Permit. An update on CDOT's progress will be provided to EPA in conjunction with the resource assessment (1PM).	**Status**: Partially Complete /In Process Complete: CDOT has issued the updated Standard Specifications for Road and Bridge Construction. (See 1CS for description) In Process: The Construction Program revision is in process and will address chronic noncompliance by contractors and associated frequency of MS4 Compliance Inspection– An update on CDOT's	**Status**: Partially Complete /In Process Complete: As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction. Actions: • See response for 2CS - New MS4 Construction Program Development.

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chronic noncompliance by contractors. Submit this update to EPA.		progress will be provided to EPA in conjunction with the resource assessment (1PM). Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	• Chronic non-compliance is being discussed within our task force on how to better address this issue and whether a spec change or other directive is the most effective approach. Next Steps: • See 1CS and 2CS for Next Steps Additional Safeguards Being Added: Training Development In Process – See 1CS and 2CS for training next steps.
5CS – Contractors' failures to meet Construction General Permit and Green Book requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites. Corrective Action: Ensure contractors, as well as CDOT, are in compliance with the Permit and the Standard Specifications. This includes ensuring the CDOT and TECS inspectors are trained on the requirements and enforce those requirements. Indicate in a response how CDOT intends to ensure compliance.	**Status**: In Process CDOT is in the process of updating specification 208 of the Standard Specifications and will also provide training on this change. In addition, the TECS certification will be reviewed and modified as necessary to improve performance of inspectors and contractor TECSs on construction sites.	**Status**: Partially Complete /In Process Complete: CDOT has issued the updated Standard Specifications for Road and Bridge Construction. (See 1CS for description) Training Development In Process – Will detail in a later deliverable.	**Status**: Partially Complete /In Process Clarification: CDOT personnel and contractors were instructed to provide support to EPA during the audit, but were not instructed to lead the inspection. This could account for the observations made regarding the personnel involvement that day, but to be sure all staff perform well, CDOT is also proposing training regarding this findings requirement. Complete: • As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction. • Best Management Practices (BMP) selection class is already being offered and helps field practitioners choose the proper BMP for differing field situations. Actions: CDOT is leading an MS4 Construction Program Task Force that is developing procedures on how to audit CDOT Projects to insure that the MS4 Permit requirements are met, that CDOT standard specs are understood and enforced, and that the General Construction Permit requirements are being met. Trainings • See response for 1CS TECS Certification Training and for Water Quality and Erosion Control Specification Training.

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			• See response for 2CS - New MS4 Construction Program Development for how chronic non-compliance will be addressed. • Stormwater Management Plan Preparer class is being finalized and will address how to design a good SWMP. Next Steps: • See 1CS and 2CS for Next Steps • Complete MS4 Training materials. • Schedule and deliver training
New Development/Redevelopment Program - ND			
1ND – The inventory of CDOT Permanent Water Quality Facilities (PWQFs) was incomplete and inaccurate. Corrective Action: CDOT must maintain an accurate inventory of PWQFs in order to ensure long-term maintenance of them. Indicate in a response 1) how CDOT will update its inventory, 2) describe the platform for the inventory (e.g., OTIS, etc.) and 3) indicate how that inventory will be used to ensure long-term maintenance.	**Status**: Partially Complete /In Process In Process: CDOT will update and maintain an accurate inventory of its assets. Complete: In the response letter, 1) CDOT indicated how this will happen, 2) that the inventory will be housed in SAP (CDOT's centralized project tracking system) and use the OTIS database (CDOTs version of a GIS database) in support of the new MS4 Permit requirements. 3) The inventory/SAP will be used to track inspections and maintenance activities, and the actual cost of these activities to ensure an accurate cost for future budgeting of long-term PWQF maintenance.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, CDOT indicated how the PWQ process will be conducted and the platform that will be used for the PWQF inventory. In Process: CDOT is working on updating and maintaining an accurate inventory of its assets - Will detail in a later deliverable. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, CDOT indicated how the PWQ process will be conducted and the platform that will be used for the PWQF inventory. Complete: PWQF Future Inventory Identification Process Has Been Developed - Regions and HQ developed and implemented a procedure for adding new PWQFs to SAP and including Area Treated Geodatabase. These steps were provided in this deliverable as NDRD Attachment 4/Attachment A. As stated previously in the Dec. 11 2015 submittal, the inventory/SAP will be used to track inspections and maintenance activities, and the actual cost of these activities, to ensure an accurate cost for future budgeting of long-term PWQF maintenance. Actions: In Process/Almost Complete: PWQF Inventory - Regions have submitted data to add missing PWQFs to SAP inventory and OTIS database. Reaching out to staff maintenance who is also reviewing the data and adding any other missing PWQFs. Next Steps:

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			1) Additional QA/QC of PWQF database, identify any missing data, including maintenance agreements/ instructional documents, areas treated, or inlet/outfall data. Update the SAP/GIS layer to add missing data including links to relevant documents. Once we have completed the inventory, we will have steps in place to ensure long-term maintenance. Additional Safeguards Being Added: Training: Specific training handouts and other instructional materials are under development. The specific training classes that address this finding include: • PWQ Maintenance Training Certification - Covers proper design and design review for PWQ Control Measures (CMs) to ensure PWQ CMs meet CDOT MS4 permit and Design Standards. Next Steps: • Complete MS4 Training materials. • Schedule and deliver training
2ND – CDOT does not have a complete list of PWQFs with intergovernmental agreements (IGAs) and is not ensuring long-term maintenance or proper operation and maintenance of PWQFs with IGAs. Corrective Action: Develop a procedure to ensure long-term maintenance is performed on CDOT's PWQFs and that they are operating properly, including those that are covered under IGAs or other similar agreements with external entities. Provide a procedure to the EPA and CDPHE describing CDOT PWQFs maintained by Local Municipalities: 1) How CDOT will keep this IGA-covered inventory accurate, 2) How CDOT will transmit info from routine inspections of PWQFs to the local municipality, and 3) How CDOT will verify the maintenance needs identified are accomplished.	**Status**: In Process The PWQ Procedure Assessment report, already under development, will address all the requirements in EPA's 2 ND finding and evaluate the current inspection and maintenance procedures including: • How inspection findings are communicated to maintenance, • How maintenance work activities are generated and tracked. • Evaluate the current procedures surrounding IGAs, including reviewing IGA language • Evaluate the procedures for communicating inspection and maintenance requirements to the local agency. • Develop a procedure to ensure that the delegated responsibilities are being tracked and performed by the local agencies.	**Status**: In Process The PWQ Procedure Assessment report is under development - Will detail in a later deliverable. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: In Process The PWQ Procedure Assessment report is under development for both those CDOT PWQFs maintained by Local Municipalities and those maintained by CDOT. Actions: Staff have reviewed PWQ procedures concerning CDOT PWQFs that are local-agency-maintained and have met with CDOT Management to get direction on developing new policy and procedures to address existing and future CDOT PWQFs maintenance when conducted by local agencies. Next Steps: • Developing formal policies and standard operating procedures to address local-agency-maintained CDOT PWQF for CDOT management approval and adoption.

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			• Conducting baseline inspections of all CDOT PWQFs that are local-agency-maintained. • Will request past inspection and maintenance records from those local agencies with CDOT PWQF maintenance responsibilities. • Will provide a formal letter outlining a list of maintenance actions needed for those relevant PWQFs to those local agencies. • Will develop procedures to verify that maintenance needs are accomplished. Additional Safeguards Being Added: Training: See response for 1ND trainings. • See 1ND for training Next Steps
3ND – CDOT was not ensuring long-term maintenance of PWQFs. Corrective Action: Develop a procedure to ensure that maintenance is performed on CDOT's PWQFs and that they are operating properly, including those covered under an IGA or other similar agreements with external entities. Provide a procedure to the EPA and CDPHE describing how CDOT will ensure long-term maintenance will be accomplished as well as a timeframe for implementing and completing all currently needed maintenance.	**Status**: In Process The assessment report, already under development, will address the procedures to ensure maintenance is performed and that PWQFS are operating correctly as outlined in EPA Finding 3ND.	**Status**: In Process The PWQ Procedure Assessment Report is under development - Will detail in a later deliverable. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: In Process As stated for 2ND, the PWQ Procedure Assessment report is under development for both those CDOT PWQFs maintained by Local Municipalities and those maintained by CDOT. Actions: Inspection Procedures - Staff revised CDOT PWQF Inspection Form and are conducting a test case of these inspections in order to ensure these new procedures are adequate. Next Steps: • Develop formal policies and standard operating procedures to address CDOT-maintained CDOT PWQF for CDOT management approval and adoption. o Revise the inspection process after the field test is complete o Implement the developed procedures to inspect the entire CDOT inventory as a baseline • Complete the PWQ Procedure Assessment report and deliver to CDPHE and EPA. Additional Safeguards Being Added: Training: Specific training handouts and other instructional materials are under development.

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			The specific training classes that address this finding include: • PWQ Maintenance Training Certification - (See 1 ND for description) • PWQ Drainage Design Review Certification - Covers inspection, maintenance and documentation of PWQ Control Measures. Includes: (1) basic certification training to maintenance personnel that may encounter PWQ CMs or assist in maintaining PWQ and, (2) advanced certification for maintenance personnel responsible for maintaining inventory. Next Steps: • Complete MS4 Training materials • Schedule and deliver training
4ND – There is a lack of funding for long-term maintenance of CDOT's PWQFs. Corrective Action: Allocate adequate funding to the reginal offices in order to ensure long-term maintenance of PWQFs. Additional Information Requested: For each region, provide EPA and CDPHE with the following: 1) How much funding is allocated for PWQF maintenance in R1? 2) Why is funding similar in R2 and R4 when the PWQF are so much more in R2? 3) In R3, how can CDOT ensure PWQF are maintained by local agencies when no IGA is in place? 4) In R5, how are all 19 PWQF maintenance ensured with only 1 IGA in place and no maintenance funding provided to the region? 5) What additional resources are needed to provide long-term maintenance of PWQF? Include a dollar amount and indicate how much would need to be allocated to equipment, FTEs, etc.	**Status**: Partially Complete /In Process Complete: 1&2&5) Responses were provided for all past financial information requested but it was pointed out that CDOT does not track maintenance of PWQF separately, and with the inventory still needing updating, the information was likely inaccurate and underestimated for what they did track. There are underlying problems in using SAP to track PWQF specific activities. This will be addressed and provided along with the resource assessment (see 1PM response). It is hoped that when this tracking is more accurate, it can help refine the budget requests for future maintenance needs. 3) Information was provided on how R3 works with local agencies regarding maintenance responsibilities. 4) All 19 PWQF are covered under the one IGA. In Process: A resource assessment will be prepared as stated in our response to 1PM and will include dollar amounts as well as the allocation of these amounts compared with our current resource allocations. The assessment	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, currently known financial information for funding PWQF maintenance was listed. In Process: The Resource Assessment Report is under development - Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, currently known financial information for funding PWQF maintenance was listed. Actions: • PWQF Maintenance Cost Estimating – Staff drafted a cost estimate tool to be used to estimate PWQF maintenance costs. The tool is used during inspections and is currently being tested on a subset of PWQFs. Data will be used to develop a preliminary cost estimate to maintain PWQFs in the near term. Next Steps: • Prepare preliminary Resource Assessment for PWQ maintenance and present.to executive management for review, decision, and approval. • Develop an SAP module to collect and track PWQ cost. This will allow for better maintenance cost estimates in future years.

EPA Finding Number – Title	CDOT Response December 11, 2015	CDOT Response April 11, 2016	CDOT Response September 28 2016
	report will also include, if applicable, a recommendation on additional resources needed at the Regional offices in order to ensure long-term maintenance of PWQFs.		• Continue to refine the Cost Estimate Tool as more data is collected during routine PWQF inspections. • Complete PWQF Maintenance Resource Assessment and deliver to CDPHE and EPA.
EPA's Appendix B NDRD Inspection and Maintenance Summary Table [for 5 regions]	**Status**: Partially Complete /In Process CDOT delivered a table with this finding response table showing that they have some PWQFs that were completed by the time of this deliverable, and some that were scheduled for later. Some were identified as being maintained by a local agency, others were maintained by CDOT. Those Local Agency PWQFs will be inspected this year, along with other local agency maintained CDOT PWQFs, to make sure maintenance is being conducted.	**Status**: Partially Complete /In Process The remaining results from this EPA finding on PWQ features - Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: 21 of the 30 PWQF that needed maintenance have been completed. Actions: CDOT provided the updated response to all of the 30 findings in PWQ Attachment B in this submittal: • 21 of these have completed maintenance on them. • The 9 remaining are Local-Agency-Maintained PWQFs where we are either working on getting IGAs in place, or implementing a process to track and request documents from them annually. Next Steps: Complete the 9 LA maintenance related actions. The others will be addressed as IGAs are developed or policy is investigated and enforced but no later than the end of CDOT's fiscal year (June 30, 2017).
Pollution Prevention Program - PP			
1PP – CDOT maintenance facilities were not fully implementing facility runoff control plans (FRCPs), updating or amending FRCPs, and FRCPs did not address all required items. Corrective Action: Implement the FRCP program. Evaluate of each of the maintenance facilities listed in the report and provide EPA and CDPHE a numbered summary of actions performed to address each of the 18 corresponding numbered failures of CDOT to fully implement FRCPS, update or amend the FRCPs, and address all required items in the RECPs.	**Status**: Complete CDOT's Facility Runoff Control Program (FRCP) was being properly implemented and was in compliance with the MS4 permit. During EPA field inspections of the maintenance facilities listed in this audit report, there were 18 findings. A finding is not a violation of our MS4 permit but rather one of the first steps in a properly functioning FRCP. These findings were addressed during the inspection or immediately upon notification and each of the 18 numbered findings response summaries were provided in this response letter.	**Status**: Completed Complete: As stated in a previous submittal, the FRCP was being properly implemented and findings corrected when identified. Additional Safeguards Being Added: Training Development In Process – Will detail in a later deliverable.	**Status**: Completed Complete: As stated in a previous submittal, the FRCP was being properly implemented and findings corrected when identified. Completed Additional Safeguards: FRCP Training has been revised and is being implemented.

Attachment 1: Summary of Past and Current Actions.

EPA Finding Number – Title	CDOT Response December 11, 2015	CDOT Response April 11, 2016	CDOT Response September 28 2016
2PP – The 18500 East Colfax Avenue maintenance facility did not have the most recent updated FRCP on-site. Corrective Action: Ensure facilities have the most recent updated FRCP on-site, and ensure the facilities receive updated copies. Provide the EPA and CDPHE with a response indicating how CDOT will ensure this occurs in the future.	**Status**: Partially Complete /In Process Complete: The facility binder dated June 2014 was on site and was supplied to EPA later during the inspection. The FRCP that EPA is referring to was an old FRCP which was also stored on site. During the Annual FRCP audit (May 27, 2015), all documents were on site and up-to-date. This binder is now located at the entrance to the main facility building hallway. This allows access to all facility personnel. All site personnel that are involved and/or responsible for different areas of the FRCP will be trained. In Process: Training Development In Process – Will detail in a later deliverable.	**Status**: Partially Complete /In Process Complete: As stated in a previous submittal, the FRCP was being properly implemented and findings corrected when identified. In Process: Training Development In Process – Will detail in a later deliverable.	**Status**: Completed Complete: As stated in a previous submittal, the FRCP was being properly implemented and findings corrected when identified. FRCP Training has been revised and is being implemented.
3PP – Potential non-allowable stormwater discharges have occurred at maintenance facilities in Region 2. Corrective Action: Ensure non-allowable stormwater discharges do not occur. Evaluate of each of the potential non-allowable stormwater discharges listed in the report and provide EPA and CDPHE a numbers summary of actions corresponding to each of the 4 numbered discharges to ensure each of these do not occur in the future. Additional Information Requested: Provide the EPA and CDPHE with plumbing diagrams for the 905 Erie year showing the destination of the sand/oil interceptor on the north side of the main building and the drain inside the paint booth building. If no diagram is available, CDOT may need to dye test these drains and collect any dye with a vacuum truck if it discharges through the storm sewer pipes.	**Status**: Partially Complete /In Process Complete: CDOT evaluated each of the 4 issues listed in the report and found that CDOT was in compliance with the permit. No non-allowable stormwater discharges had taken place. In Process: Since CDOT does not have plumbing diagrams for this facility showing the information requested by EPA, a dye test will be conducted to prove the flows of this drain.	**Status**: Complete A dye test was completed on CDOT's 905 Erie Facility on February 17, 2016 on the sand/oil interceptor on the north side of the main building and for the floor drain inside of the paint booth building at the facility. Also surveyed were the storm inlets and where they meet the outfall interceptor north of the Creekside Building. This dye test satisfies this finding and showed no discharges were occurring at this maintenance facility in Region 2.	**Status**: Completed Actions: No further action required on this finding.

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Attachment 2: Program Management/ Resource Assessments Updates

This response will address Corrective Actions involving the Program Management, Construction, and NDRD Resource Assessments.

This submittal addresses the Corrective Actions and Recommended Actions under the Hydrologic Resources and Ecological Design Section.

During the March 17, 2016 meeting between EPA (Stephanie DeJong and Gwen Campbell) and CDOT (Tom Boyce and Rick Willard), both agencies agreed that CDOT would provide Action Plans for the completion of resource assessments for MS4 Program Management finding category. These include resource assessments supporting CDOT's ability to implement the MS4 Program effectively.

This portion of the submittal provides updates on the following findings:

- 1PM - The MS4 program appeared to lack adequate resources and equipment for Maintenance and Regional staff to conduct future Pollution Prevention inspections at maintenance facilities.
- 2PM – CDOT Headquarters and Regional staff are not consistently aware of the requirements in the Stormwater Management Programs, and the Stormwater Management Programs are not being consistently implemented [recommended for CDOT to develop a self-audit and corrective actions program].
- 2CS - CDOT failed to ensure compliance with the Construction General Permit, enforce according to the Green Book, and implement sanctions for chronic failures at design-bid projects.
- 3CS – CDOT failed to follow the Green Book procedure for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions that went beyond 48 hours.
- 4CS – CDOT has no formal mechanism to address chronic noncompliance by contractors as long as corrective actions occur within 48 hours.
- 5CS - Contractors' failures to meet Construction General Permit and Green Book requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.
- 4ND – There is a lack of funding for long-term maintenance of CDOT's PWQFs (this resource assessment description is Part III referred to below and is covered under the New Development/Redevelopment, Permanent Water Quality (PWQ) section)

Program Management/Resource Assessments

1. Part I: The initial resource assessment for CDOT HQ Hydrologic Resources, Ecological Design (HRED) Section support was presented to CDOT Executive Management on September 13, 2016 to support the operations and additional work load to address the EPA Audit Corrective Actions and implementation of the MS4 Permit. This was approved by Executive Management, and now will be presented at a Transportation Commission Meeting in the fall (November) for funding approval.
2. Part II: The resource assessment for the 5 Engineering Regions and 9 Maintenance Sections to deliver the MS4 Program (minus PWQ Resource Assessment) - has been compiled and is being refined for subsequent delivery to CDOT Executive Management (specifically to the Regional Transportation Directors) for their review, direction/input, and approval. Their recommendations will be presented at a subsequent Transportation Commission Meeting for added resources considered necessary to deliver the MS4 Permit Program.
3. Part III: The resource assessment for the 5 Engineering Regions and 9 Maintenance Sections operations concerning maintenance of the PWQ inventory is in progress and covered in the NDRD/PWQ section of this submittal (see Attachment 4 NDRD/PWQ).

Program Management/Self Audit and Corrective Actions Program

The MS4 Construction Program is developing an oversight program to insure compliance with permits, uniformity between the regions, clear defined roles, an escalation process for non-compliance, and to insure MS4 requirements are reportable. The MS4 Construction Oversight Program is a CDOT's self-auditing process of CDOT's MS4 Construction Program that will have clear paths of escalation for any corrective actions. As part of this oversight, the CDOT Audit Branch will perform compliance assurance audits of the MS4 Program. HRED has conducted water quality training sessions with internal audit staff members so that they understand the program and what they need to address. An audit program guide is under development that is required before CDOT conducts audits on any program. The next step is to complete this guide and to start conducting audits. If problem areas are identified from these audits, Adaptive Management will be performed to bring the program back into compliance.

Program Management Training Program

The overall MS4 Training Program, and the Standard Operating Procedures governing this program, is outlined in Attachment 5, Training Program. A roster will be submitted to EPA and CDPHE when students have taken this training. This addresses 2PM and 3PM findings asking that CDOT staff be trained on the requirements of the MS4 Permit and associated CDOT programs.

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Attachment 3: Construction Program

This response will address Corrective Actions involving the Construction Program.

This submittal addresses the Corrective Actions and Recommended Actions under the Hydrologic Resources and Ecological Design Section.

Therefore this portion of the submittal provides updates on the following findings:

- 1CS – The [208.09] Standard Specifications do not require stop work orders to be issued for discharges to state waters or other egregious non-compliance instances.
- 2CS - CDOT failed to ensure compliance with the Construction General Permit, enforce according to the Green Book, and implement sanctions for chronic failures at design-bid projects.
- 3CS – CDOT failed to follow the Green Book procedure for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions that went beyond 48 hours.
- 4CS – CDOT has no formal mechanism to address chronic noncompliance by contractors as long as corrective actions occur within 48 hours.
- 5CS - Contractors' failures to meet Construction General Permit and Green Book requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.

<u>Construction Program</u>

1. **Completed Spec Change:** In the April 11 submittal, the 208.09 specification was changed from "may" to "will" on March 29, 2016 which addresses 1CS, 2CS, 3CS, 4CS, and 5CS. The Chief Engineer's Memo that communicated this change to the rest of CDOT sent out many additional requirements and gave firm direction to the Project Engineers concerning Regulatory Authority.
2. **Completed Design-Build Training Modules:** CDOT developed two Design-Build training modules for environmental compliance, including water quality, to train internal engineers regarding environmental risk which addresses 2CS.
3. **In Process, Design-Build Improvements:** CDOT recently participated in a national peer exchange led by FHWA regarding lessons learned for Design-Build projects during the week of September 19, 2016, and will evaluate relevant changes in guidance to try to address why these kinds of projects tend to have more problems, and address those root causes which addresses 2CS.

4. **In Process, MS4 Construction Program Revision:** The MS4 Construction Program is being revised to include CDOT's new MS4 Permit requirements, and input from this EPA Audit, and will include an escalation process that will address chronic noncompliance by contractors and associated frequency of MS4 Compliance inspections. It will also address statewide consistency for applying this program. As part of this effort, CDOT is developing processes for the MS4 Construction Program, and implementing Performance Measures to insure that CDOT is adhering to the program. This is underway through a series of Task Force Meetings with the regions, the last of which should be complete by January 2017. The MS4 Construction Program Description Document, per our 2015 MS4 Permit Compliance Schedule is due March 1, 2017 which is when this program should be defined and implemented. This action addresses 2CS and 4CS.
5. **In Process, TECS Certification Evaluation:** CDOT already has reviewed the TECS Certification and is making changes where needed. This addresses 5CS.
6. **Other:** Resource needs for the new Construction Program were included in the 1PM Resource Assessment - Attachment 2.

Additional Safeguards Being Added

CDOT has decided to also include some additional safeguards beyond what was asked for in the EPA Audit. This includes additional training on our MS4 Programs to better improve anticipated permit compliance. These include continuing to reach out to relevant audiences and get the message out about the recent changes in the specifications dealing with the issuance of liquidated damages and stop work orders.

1. **In Process, Improved Communication**: CDOT staff are using the CDOT Change Action Network (CAN) to help distribute the Chief's message and make all involved groups aware of the new specifications regarding contractor compliance management. Including putting into ESCAN on the Project Engineer's CARL page a pdf of 208.09 and the CE memo for all PEs on projects to reference. This message is also being delivered to consultants and engineers at the Winter Transportation Conference.
2. **In Process, Additional Training Development:** The revised Specification 208.09 concerning Liquidated Damages, and the Chief Engineer's training are being included in various trainings (see Attachment 5: Training Program). The TECS class is including other EPA audit items in its training curriculum to ensure awareness and MS4 Program compliance. The MS4 Construction Program Description Document will have a training of its own to roll out this guidance. Stormwater Management Plan Preparation Class will help these be better written, and better managed as well.

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Attachment 4: New Development/Redevelopment (aka Permanent Water Quality) Program

This attachment specifically addresses the CDOT Permanent Water Quality (PWQ) Program (referred to as ND for New Development/Redevelopment in the EPA Audit Report). In addition, in the EPA Audit report, the term Permanent Water Quality Facility (PWQF) is synonymous with PWQ Control Measures (CM) term used in CDOT's MS4 Permit. In order to address EPA's findings on the PWQ Program, CDOT has created a small work group to review PWQ policy and procedure from planning through maintenance. While EPA's findings focused on maintenance, CDOT staff believe that planning and design impact staff's ability to effectively and safely maintain the PWQ inventory. This review of process and procedure is coming to a close, and is being incorporated into a PWQ Process and Procedure Assessment Report.

- The PWQ Process and Procedure Assessment Report identifies underlying problems that led to EPA's findings and will suggest solutions to address these problems. Some of the solutions to the problems underlying the audit findings are items that can be addressed at the staff level and some require management decision items. The results of this Process and Procedure Assessment will be shared with the regions and management. Management will be consulted on policy level decisions. The resulting process, procedures and policy will be incorporated into the MS4 permit required PWQ Program Description Document (PDD).

- In addition to the PWQ Process and Procedure Assessment, a PWQ Resource Assessment is being conducted, which evaluates what resources CDOT needs to implement the PWQ program, particularly the resources needed to maintain PWQ Facilities (PWQFs). The PWQ Resource Assessment is supported by the PWQ Process and Procedure Assessment, which will assess future budgeting and maintenance tracking processes and procedures.

Some of the staff level decisions associated with the PWQ Process and Procedure Assessment have been made and changes are being implemented. Additionally, the PWQ Resource Assessment has been started. Both the staff level decisions and the PWQ Resource Assessment progress are discussed under the EPA Corrective Actions heading below.

EPA will find three attachments that support the progress CDOT has made on these findings. The attachments are described below:

- **PWQ Attachment 1 – SAP Inventory and Area Treated Geodatabase Procedures** Newly developed and implemented procedures detailing how to have data associated with PWQ facilities added into the SAP Inventory and the Area Treated Geodatabase.
- **PWQ Attachment 2 – Response to EPA Audit Report Table B** Since the 12/11/2015 CDOT Submittal to EPA maintenance has been done on most PWQ visited or reviewed by EPA during the Audit. Attached is a table describing when maintenance was completed. The exception is Local Agency (LA) maintained PWQF. CDOT is working with Local Agencies to remedy the specific situations identified by EPA. Additionally, as described in under the 2 ND heading below, CDOT is working with management to develop and implement policy and procedure that will ensure timely maintenance of local agency maintained PWQ going forward.
- **PWQ Attachment 3 - PWQ Inspection and Cost Estimate Test Example** Examples of completed PWQ inspection and associated cost estimate described under the 4 ND heading. The cost estimates will calculate both CDOT's cost and the contractor's cost to bring the CM into compliance and will show the anticipated cost for routine maintenance. The PWQ Inspection and Cost Estimate Table are the primary tool that will be used in the CDOT PWQ Resource Assessment.

CDOT EPA Corrective Actions and Next Steps for the PWQ Program

Since the 12/11/2016 CDOT Preliminary Response to the EPA Audit, CDOT has implemented initial steps addressing each of the EPA findings. Outlined below is a summary of the actions CDOT has already taken, and next steps to be taken, to address all of the ND (PWQ) Program findings. Once complete, the PWQ Process and Procedure Assessment Report and PWQ Resource Assessment Report will fully explain the problems underlying the EPA Audit ND findings, the solutions to address the findings, and actions taken.

This submittal addresses progress on the following Findings:

Finding 1 ND - The inventory of CDOT permanent water quality features (PWQFs) was incomplete and inaccurate.

Actions Taken:

- Regions and HQ developed and implemented a procedure for adding new and missing PWQFs to SAP and Area Treated Geodatabase (PWQ Attachment 1).
- Regions submitted data to add missing PWQFs to SAP inventory using the new SAP Procedure. Staff maintenance reviewed and added the PWQFs to SAP.

- CDOT Regions are reviewing SAP PWQ Inventory to QA/QC data and noting which PWQFs are maintained by CDOT or a local agency. If maintained by a local agency, staff will also note whether it is maintained by agreement or by State Statute.

Next Steps:

- HQ Staff will give the completed SAP inventory to a consultant who will perform a data gap analysis on missing documents and will then update the GIS layer to reflect all PWQ in the inventory including links to documents.

Finding 2 ND - CDOT does not have a complete list of permanent water quality features (PWQFs) with Intergovernmental Agreements (IGAs) and is not ensuring long-term maintenance or proper operation and maintenance of PWQFs with IGAs.

Actions Taken:

- Staff have reviewed PWQ procedures concerning local-agency-maintained PWQFs and are working with management on developing new policy and procedures to address existing PWQ and future PWQ.
- Staff have identified the need for training (PWQ Maintenance Training Certification and an introduction to the PWQ Program as part of the CDOT MS4 Programmatic Training)

Next Steps:

- Meet with Local Agencies to discuss PWQFs maintained through IGAs or State Statute.
- CDOT Staff will request inspection and maintenance records for Local Agency maintained PWQ once a policy is in place.
- Develop and implement PWQ Training, including PWQ Maintenance Training Certification and CDOT MS4 Programmatic Training

Finding 3 ND - CDOT was not ensuring long-term maintenance of PWQFs.

Actions Taken:

- Staff revised CDOT's PWQFs Inspection Form and are conducting a test case of PWQ inspections in order to ensure new procedures are adequate.
- Staff drafted a cost estimate tool (PWQ Attachment 3 - PWQ Inspection and Cost Estimate Test Example) used to estimate PWQFs maintenance cost. The tool is being used on the PWQ Test Inspections. Data will be used to develop a Preliminary PWQ Cost Estimate to maintain PWQFs.

Next Steps:

- Staff will revise the inspection process after the initial inspection test is complete and then will implement the process to inspect the entire CDOT inventory. The PWQ Estimates will be used with each PWQ inspection to revise the Preliminary PWQ Cost Estimate.

Finding 4 ND - There is a lack of funding provided for long-term maintenance of CDOT's PWQFs.

Actions Taken:

- Staff drafted a cost estimate tool (PWQ Attachment 3 - PWQ Inspection and Cost Estimate Test Example) used during PWQ inspections to estimate

the cost of maintaining PWQFs. During the PWQ test inspections, the cost estimate tool is being used to develop average costs to maintain the different types of PWQ CMs (extended detention basins, infiltration basins, etc).

Next Steps:

- Submit the Preliminary PWQ Cost Estimate to management for direction, decision, and action.
- Staff will apply the averages from the preliminary-test cost-estimate data to the completed inventory to develop a Preliminary PWQ Inventory Cost Estimate. This will be submitted to management for direction and action.
- Staff, while inspecting the entire PWQ inventory, will continue to use the Cost Estimate tool to continually revise the Preliminary Cost Estimate and keep management appraised of the changes. CDOT will also use this information to provide a complete answer to EPA's Additional Information Request 4ND # 5 concerning what additional resources CDOT will need to ensure long term operation and maintenance of PWQFs.
- CDOT will be able to track maintenance costs by the individual PWQFs once the SAP PWQ inventory is complete. This data will be used for future planning.

EPA's Appendix B NDRD Inspection and Maintenance Summary Table (see Attachment 2)

Actions Taken:

- CDOT has completed maintenance, or other action, to remedy the findings noted by EPA in their Appendix B. All 9 remaining are Local Agency Maintained PWQFs where we are either working on getting IGAs in place, or implementing a process to track and request documents from them annually. One of these 9, is maintained by the City of Boulder, who has this PWQF on their list of PWQFs to be maintained.

Next Steps:

- CDOT has completed maintenance or other action to remedy the findings noted by EPA in their Appendix B. Complete the 9 LA maintenance related actions; these will be addressed as IGAs are developed, or policy is investigated and enforced.

PWQ Attachment A – PWQ Inventory Procedure

A.1 Adding PWQ to the SAP Inventory and the Area Treated GIS Layers

CDOT Inventories Permanent Water Quality Control Measures (PWQ CM) in MS4 areas once those structures have been installed on the associated project. Inventory procedures include tracking the structures in CDOT's Inventory (SAP) and mapping the inventory locations and associated area treated in OTIS (CDOT's GIS database).

Between constructing any new PWQ Structure and Final Construction Acceptance, the Region Water Pollution Control Manager (WPCM)/Water Quality Specialist shall:

1. Assign an SAP Functional Location number(s) to the PWQ CMs using the attached SAP Inventory Procedure
2. Provide HQ PWQ Manager and GIS section the necessary data to populate the OTIS GIS data layer following the below PWQ Area Treated GIS Layer Procedures

The regions are done with the first step (SAP) for all existing PWQ CMs installed prior to 5/1/2016. The second step for existing PWQ CMs was requested of the regions to provide updated information for those first step PWQ CMs for OTIS such as the area treated by structure, and identifying if there is an Interagency Agreement (IGA) for maintenance, etc.

The new OTIS Procedure became effective starting 5/1/2016, and the SAP Procedure became effective 2/1/2016. For the information prior to 5/1/2016, the GIS consultant will collect data from the regions to update the PWQ-Area-Treated GIS layer. Additionally, the GIS consultant will visit each of the Regions to collect data for any new PWQ installed since May 2016.

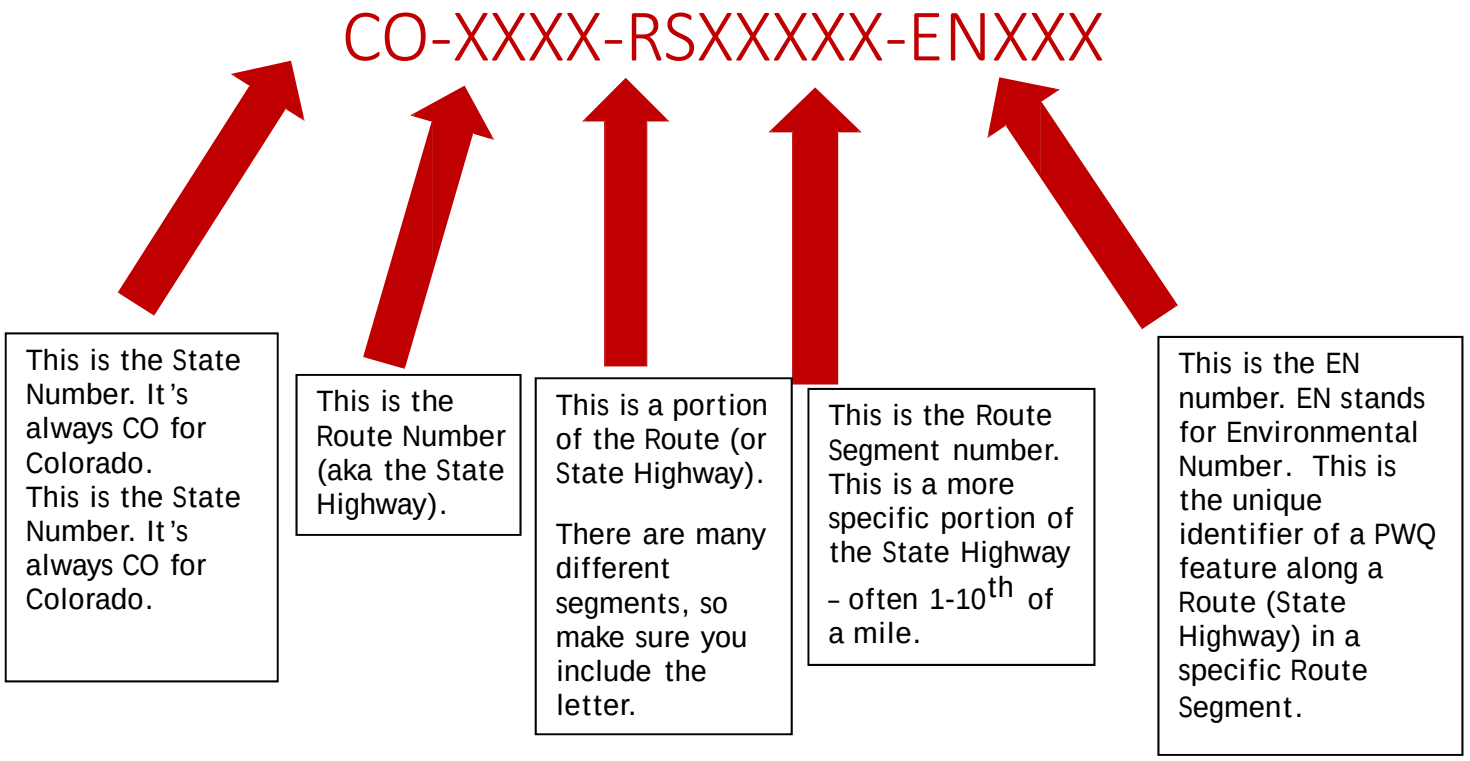
This means the GIS consultant will be primarily collecting data for projects installed between 5/1/2014 and 5/1/2016. However, we asked the regions to provide any older documents that were not available to the GIS consultant in the first round. We will make any changes to these procedures to make the process more efficient and effective. These new procedures will be incorporated into the MS4 Permit required Program Description Document (PDD) per the MS4 Permit compliance schedule.

A.2 PWQ SAP Inventory Procedure (Functional Location Numbering Procedure)

A.2.1 SAP Functional Location Numbers (Figure 1) are a means of identification of an "ASSET" within the CDOT SAP system. PWQ features are part of that *asset* that need to be tracked.

Logic and fore-thought can go along way when numbering an *asset*. Think about how a person will be accessing this location, how they will be inspecting and how they will be maintaining. Always ensure safety.

Figure 1 - This is a typical SAP Functional Location Number. Each of the numbers have a meaning and tell of an increasingly specific location.



A.2.2 Finding the Route Number (Highway Number). The Route Number (Highway number) is the first step in creating the Functional Location Number. Highways are split into REALLY LARGE segments. The way SAP recognizes the large segment, is the use of a letter at the end of the Route Number (highway). Route Numbers (highway) are always 4 digits and contain a letter.

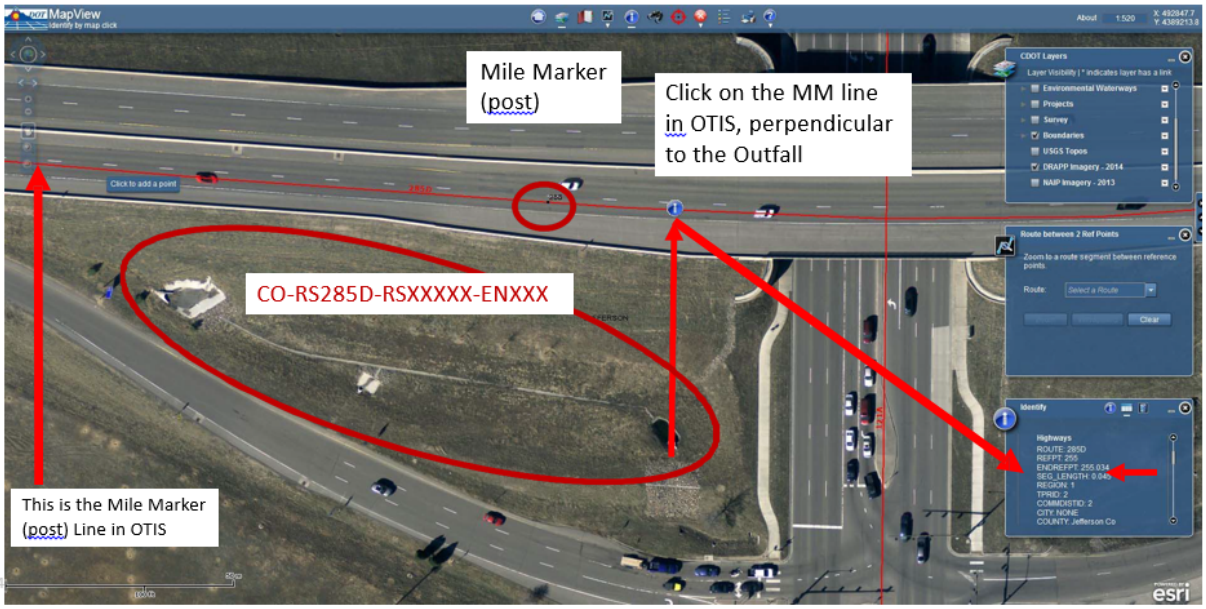
- Look in OTIS at http://dtdapps.coloradodot.info/otis
- Open the "Map View" section.
- Zoom into the area your PWQ feature is located.
- Click on the "i" button at the top of the page.
- Click on the Highway that your PWQ feature is located.
- In the lower right hand corner, a box will pop up…
    - Under "Highways" header in the box, you will see…. Route: 285D
- This is the ROUTE number CO-*285D*-RSXXXXX-ENXXX

SHORT CUT: when you zoom in, the 4 digit red number on the roadway…is the ROUTE number you are looking for; including the all-important letter.

A.2.3 Finding the Mile Marker (Post). The Mile Marker is not actually used in the Functional Location Number. However, it is used to FIND the Route Segment number (and is needed in the Spread Sheet, which we will get to later).

- Remember, we are still in OTIS (see figure 2), zoomed into to your PWQ feature location.
- Look for the two dots along the route (highway). In Figure 2, the mile marker (post) is 255.
- To turn on the map layer provided in the next page example, click on the 'CDOT Layers' box on the right hand side. Scroll down to "DRAPP Imagery-2014" and click/check the box.
- You will want to zoom in enough, so you can really see your PWQ feature.
- Click on the mile marker (post) line, so you are perpendicular to the outfall (review the next few slides on where to click "perpendicular to" for other PWQ feature types.)

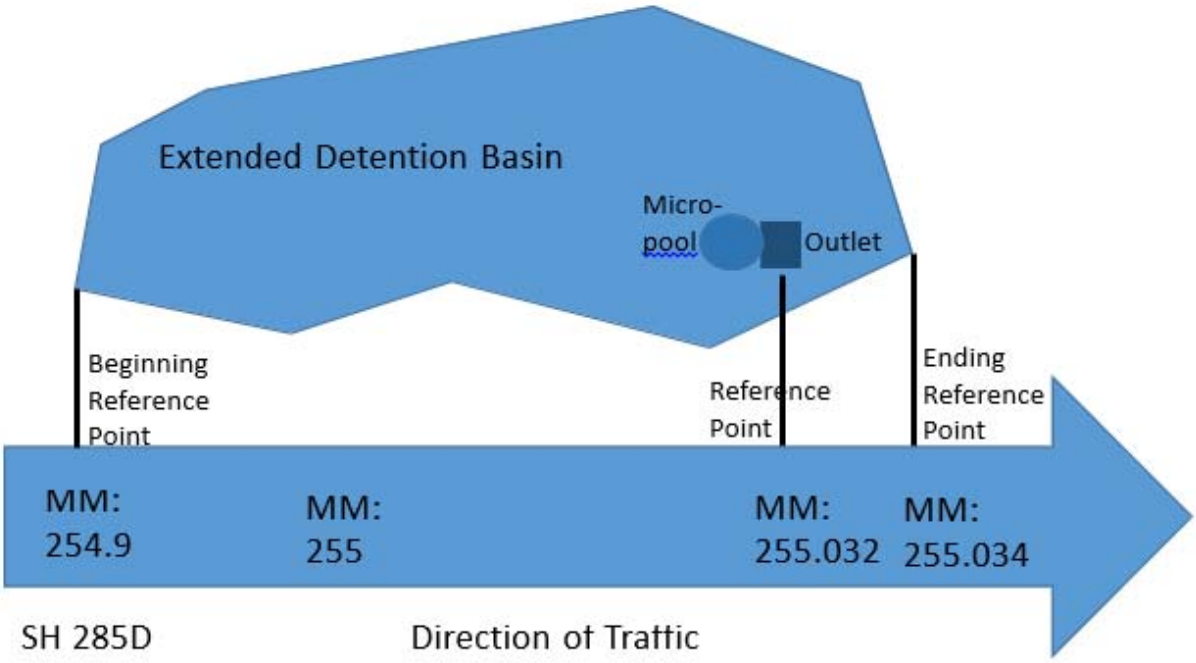
Figure 2: Finding the Mile Marker (post) in OTIS



Using the previous instructions for finding mile markers (posts), you will want to find the 3 MM points for each pond (see figure 3).

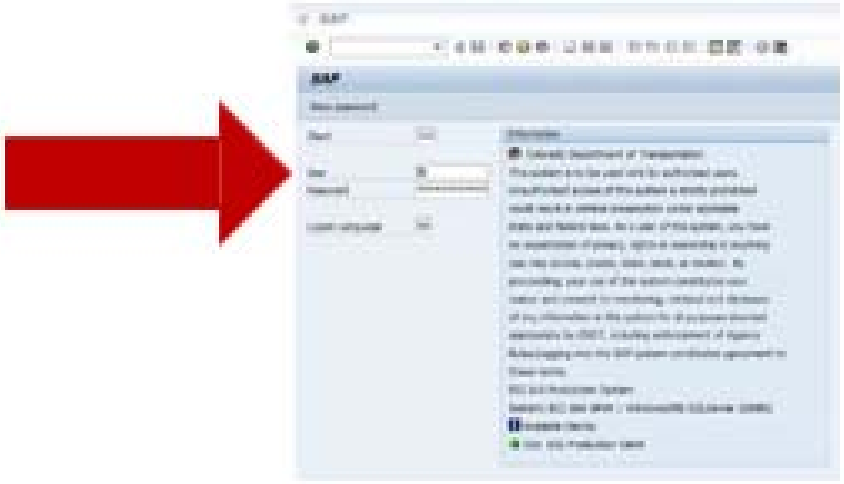
1) The Beginning Reference Point (BRP) is the edge of the pond.
2) The Reference Point (RP) is the outlet structure.
3) The End Reference Point (ERP) is the other edge of the pond.
    - Always go in the direction of traffic.
    - You will want to write these down, we will need them later.

Figure 3. Example pond and 3 mile markers to note.

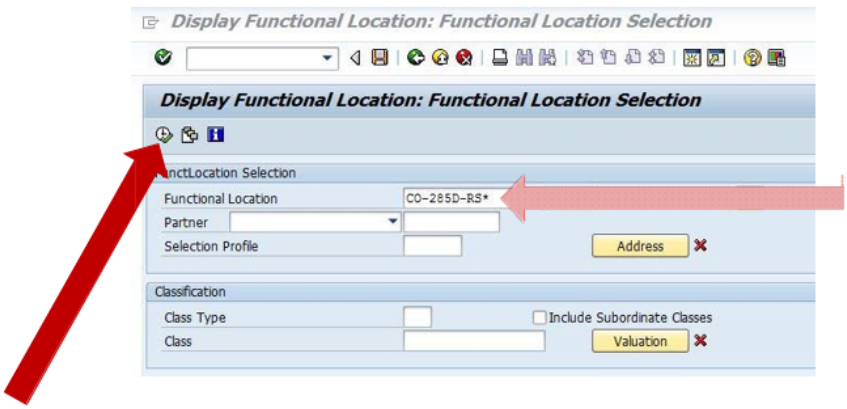


A.2.4 Finding the Route Segment Number.

1) Log into SAP (just like you would for your timesheet).



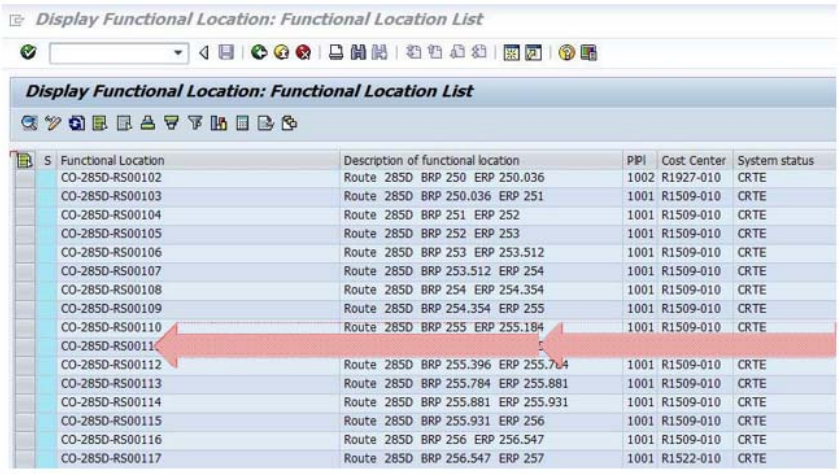
2) At the search bar on top left of the screen, enter IH06. Press Enter.



3) In the Functional Location box, enter CO-[your route]-RS*. In our example we enter CO-285D-RS*.

4) Then press the button that looks like a green clock to “execute” (or you can push F8).

A long list of Route Segment Numbers will appear. The Route Segments are a range described as the *beginning* (BRP) and the *ending* (ERP) reference points (Remember, Reference Points are actually Mile Markers (posts)).

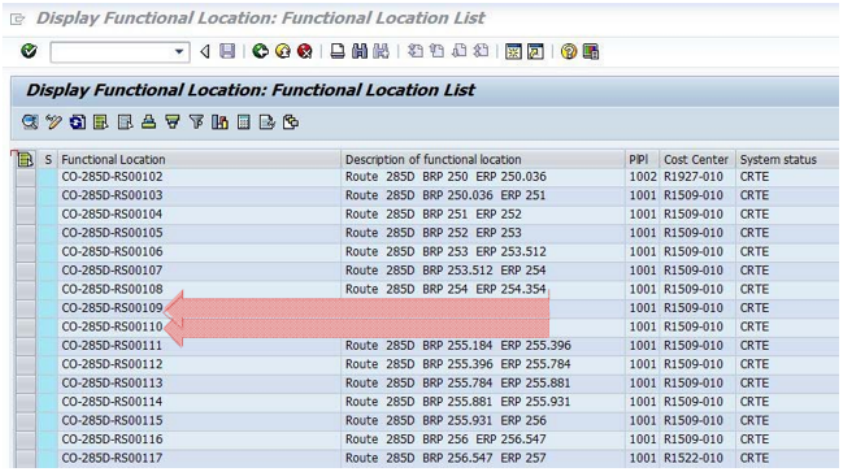


S	Functional Location	Description of functional location	PlPl	Cost Center	System status
	CO-285D-RS00102	Route 285D BRP 250 ERP 250.036	1002	R1927-010	CRTE
	CO-285D-RS00103	Route 285D BRP 250.036 ERP 251	1001	R1509-010	CRTE
	CO-285D-RS00104	Route 285D BRP 251 ERP 252	1001	R1509-010	CRTE
	CO-285D-RS00105	Route 285D BRP 252 ERP 253	1001	R1509-010	CRTE
	CO-285D-RS00106	Route 285D BRP 253 ERP 253.512	1001	R1509-010	CRTE
	CO-285D-RS00107	Route 285D BRP 253.512 ERP 254	1001	R1509-010	CRTE
	CO-285D-RS00108	Route 285D BRP 254 ERP 254.354	1001	R1509-010	CRTE
	CO-285D-RS00109	Route 285D BRP 254.354 ERP 255	1001	R1509-010	CRTE
	CO-285D-RS00110	Route 285D BRP 255 ERP 255.184	1001	R1509-010	CRTE
	CO-285D-RS0011				
	CO-285D-RS00112	Route 285D BRP 255.396 ERP 255.784	1001	R1509-010	CRTE
	CO-285D-RS00113	Route 285D BRP 255.784 ERP 255.881	1001	R1509-010	CRTE
	CO-285D-RS00114	Route 285D BRP 255.881 ERP 255.931	1001	R1509-010	CRTE
	CO-285D-RS00115	Route 285D BRP 255.931 ERP 256	1001	R1509-010	CRTE
	CO-285D-RS00116	Route 285D BRP 256 ERP 256.547	1001	R1509-010	CRTE
	CO-285D-RS00117	Route 285D BRP 256.547 ERP 257	1001	R1522-010	CRTE

5) Use the RP you found in OTIS (pg. 6) to find the RS # in SAP. Find the BRP and ERP in the SAP list that the RP falls between to determine the RS #.

Our example RP is 255.32, therefore the RS is RS00110.

6) Sometimes your BRP and your ERP span two different Route Segments.



S	Functional Location	Description of functional location	PlPl	Cost Center	System status
	CO-285D-RS00102	Route 285D BRP 250 ERP 250.036	1002	R1927-010	CRTE
	CO-285D-RS00103	Route 285D BRP 250.036 ERP 251	1001	R1509-010	CRTE
	CO-285D-RS00104	Route 285D BRP 251 ERP 252	1001	R1509-010	CRTE
	CO-285D-RS00105	Route 285D BRP 252 ERP 253	1001	R1509-010	CRTE
	CO-285D-RS00106	Route 285D BRP 253 ERP 253.512	1001	R1509-010	CRTE
	CO-285D-RS00107	Route 285D BRP 253.512 ERP 254	1001	R1509-010	CRTE
	CO-285D-RS00108	Route 285D BRP 254 ERP 254.354	1001	R1509-010	CRTE
	CO-285D-RS00109		1001	R1509-010	CRTE
	CO-285D-RS00110		1001	R1509-010	CRTE
	CO-285D-RS00111	Route 285D BRP 255.184 ERP 255.396	1001	R1509-010	CRTE
	CO-285D-RS00112	Route 285D BRP 255.396 ERP 255.784	1001	R1509-010	CRTE
	CO-285D-RS00113	Route 285D BRP 255.784 ERP 255.881	1001	R1509-010	CRTE
	CO-285D-RS00114	Route 285D BRP 255.881 ERP 255.931	1001	R1509-010	CRTE
	CO-285D-RS00115	Route 285D BRP 255.931 ERP 256	1001	R1509-010	CRTE
	CO-285D-RS00116	Route 285D BRP 256 ERP 256.547	1001	R1509-010	CRTE
	CO-285D-RS00117	Route 285D BRP 256.547 ERP 257	1001	R1522-010	CRTE

a) Find the BRP that is the same as or next closest but less than yours. In our Example its RS00109.

b) Find the ERP that is the same as or next closest, but less than yours. In our Example it's RS00110.

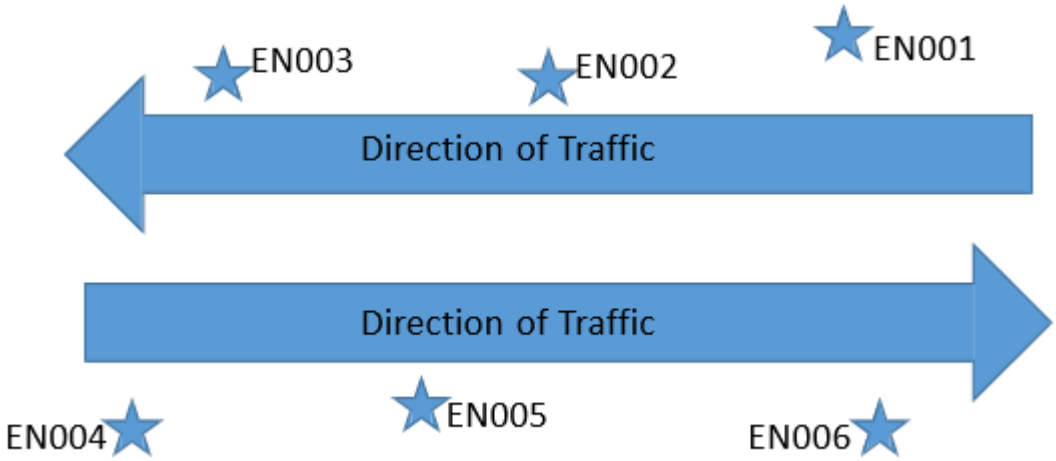
c) Remember the RP (outfall mile marker/post)? Whatever number that is, is what the RS should be. (ours was 255.032).

d) Our example is RS000110.

A.2.4. How to Develop an ENXXX Number. The EN number is the unique identifier of the PWQ feature along the State Highway. Remember, EN stands for Environmental. When you have multiple locations along a roadway, these EN numbers differentiate between the multiple PWQ features.

Simple EN Numbering: When creating an EN number, think about how you want to inspect these locations. Start with a PWQ feature and number in the direction of traffic (see Figure 4). Often times you print out a list from the computer to inspect. You don't want to have to shuffle papers more than you have to or to cross the road to inspect. Planning now eliminates future challenges.

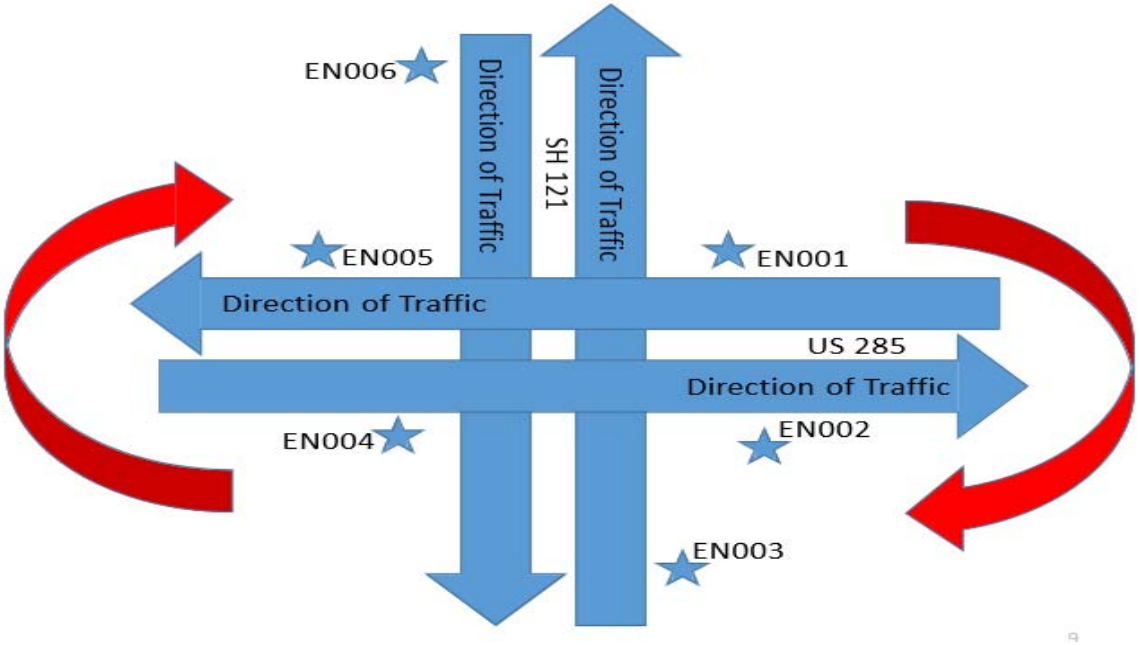
Figure 4. EN Number Creation Order.



Intersection EN Numbering: Other times, a project is not fully linear, and has PWQ features within an intersection. Start with a clock wise direction with the Northeast Quadrant (think of a clock as shown in figure 5) and work your way around the intersection. Again, thinking about traffic and how you want to inspect the intersection.

Often times, the intersection is broken into two different State Highways. In this example, EN003 and EN006 are on a different State Highway (SH 121) than EN001, EN002, EN004 and EN005 (US 285). In this interchange example, the EN numbers are labeled in clock wise order, even though they are on a different State Highway.

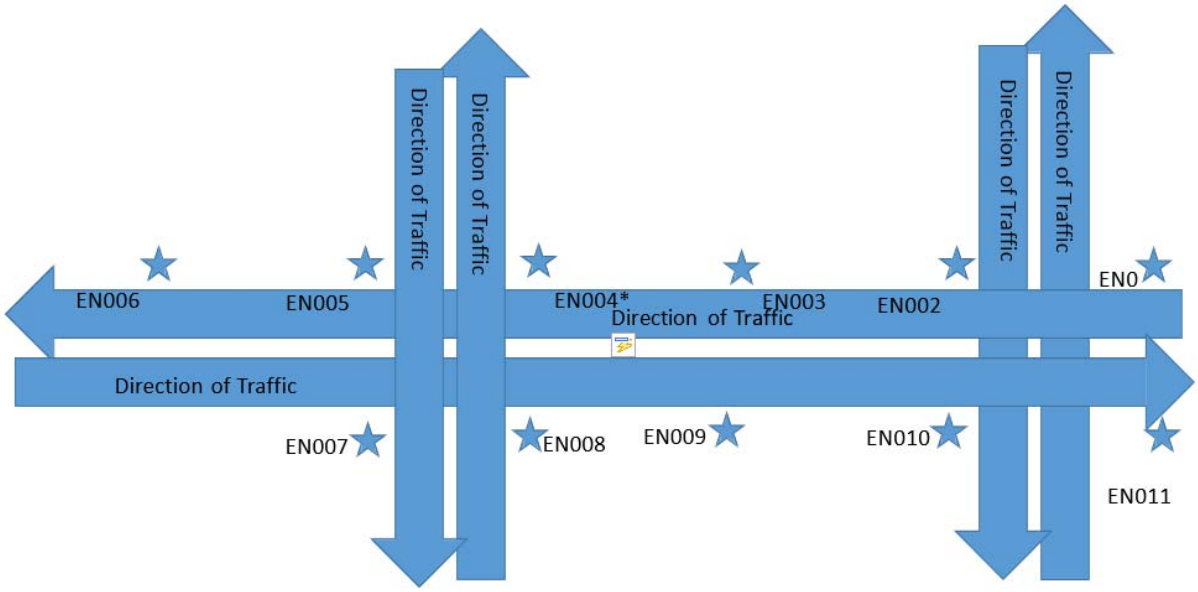
Figure 5. EN Number Creation for an Intersection.



Long Project EN Numbering: When you have a LONG Project with MULTIPLE intersections, it may make sense to number one side of the road, then to make a turn and number the other side of the road instead of numbering an interchange and the linear areas in between. Note

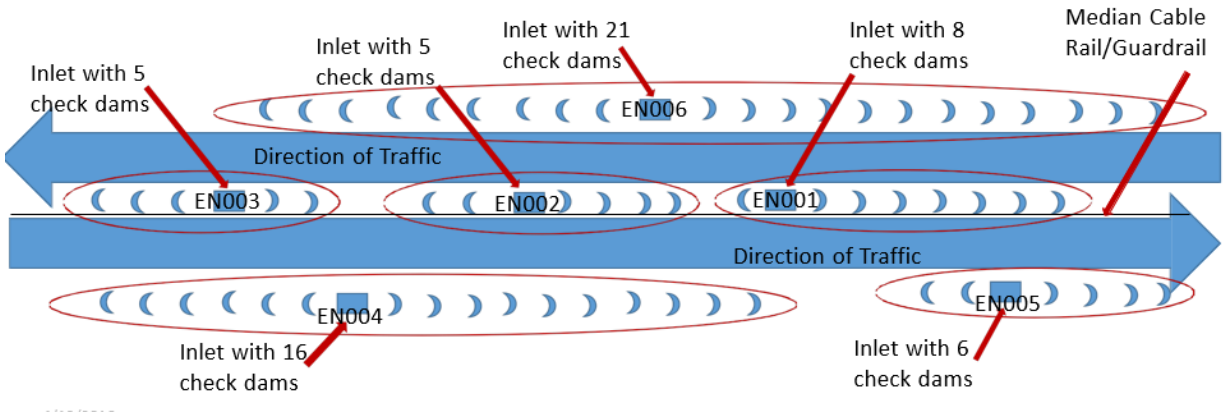
in figure 6, the EN004 is a vault underground. Simply use the top center of the manhole lid as your points (MM/Lat/Long point).

Figure 6. EN Number Creation for a Long Project with Multiple Intersections.



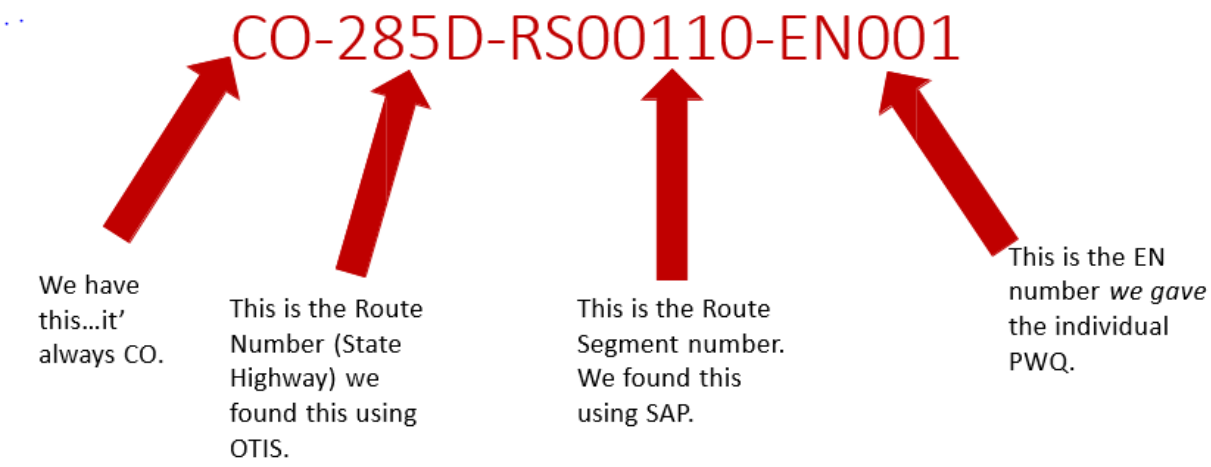
Projects with Check Dam EN Numbering: When you have a Project with many check dams, label the *INLET* and not the individual check dam(s) with an EN #. Start with the center median – going in the direction of traffic. Then do the outside in the direction of traffic. 3 trips will have to be made, but that is much safer than trying to cross the median in traffic.

Figure 7. EN Number Creation for Projects with Check Dams.



Completed Example Functional Location Number: So now we have a completed example functional location number. The parts of the number are displayed in Figure 8.

Figure 8. Completed Example Functional Location Number.



The Functional Location Spread Sheet:
You have all of your numbers, now let's start entering them into the Functional Location Spread Sheet.

- This spread sheet gets turned into Amber Williams at HQWQ. Amber will QA/QC from a PWQ perspective and send to Cindy Hancock at Staff Maintenance to upload into SAP.
- This procedure is to immediately address the EPA Audit finding regarding an accurate inventory. When HQWQ writes the Program Description Document (PDD) for CDOT's New MS4 permit, this process will be reviewed and the regions consulted to see if revision is needed.
- The spread sheet is in EXCEL.
- All the columns need to be filled out.

Finding the Latitude and Longitude:
Right now SAP does not need Lat/Long to make a Functional Location Number. HOWEVER…in order to facilitate a future where the two programs sync, the Lat and Long should be provided.

- We take the Lat/Long of the Outfall (same as RP). The Outfall is defined as the point where 1) the treatment is and 2) where the water is leaving the PWQ. In the case of our example Extended Detention Pond, the Outfall is the Concrete Box with the treatment orifice plate.
- The best way to find the Lat/Long is out in the field with an accurate GPS unit.
- The second best way to find the Lat/Long is out in the field with a cellphone which has an accuracy of about 10'.
- The third best way to find the Lat/Long is to look on Google Earth, which has an accuracy of about 10'.
- You choose the method that works best for your situation!
- The Lat/Long numbers need to be 8 digits each. Example: Lat: *39.652183* Long:-*105.08193*
- Don't forget the "-" in front of some Longitude numbers. It's very important so it actually put the PWQ feature in the right place in the world.

Env Type - Naming Your PWQ feature:

Naming the type of PWQ feature is very important. Consistency is the key or the data cannot be sorted correctly. Over the years the list of PWQ features in SAP has grown cumbersome and some PWQ feature types were duplicated. In an effort to simplify, we have clustered the types of PWQ features into the following categories.

As we revise processes in preparation for the new MS4 PWQ Program we will look at assigning 'complexity' ratings to the PWQ features. This process will be vetted.

Figure 9. Naming Categories for PWQ Features.

Proposed Category	Current Names	Description (synopsis from Urban Drainage Volume III)
Bio Retention	• Bio Retention • Bio Swale (Organic Filter)	Engineered, depressed area designed to capture and filter or infiltrate the water quality capture volume. AKA Rain garden, porous landscape detention (PLD). Can be landscaped. Has to have a storage volume, ponding depth and growing medium. Some need an underdrain system with geomenbranes/geotextile separator fabrics when infiltration (hazardous materials underground or bed rock) is not possible. Has inlet and outlet controls and is vegetated.
Grass Swale	• Grass Swale • Dry Swale	LID, designed to accommodate concentrated flows. Have a low longitudinal slopes and broad cross sections that convey flow in a slow and shallow manner. Berms or check dams may be incorporated into design. Berms need underdrain system which can drain directly into an inlet box. Underdrains need an aggregate layer.
Extended Detention Basin (EDB)	• EDB w/ Micropool	Sedimentation basin, designed to detain stormwater for a period of time after a storm runoff ends. Uses Water Quality Capture Volume to remove Total Suspended Solids. Often have a micropool at the outlet. Use small wetland or march to promote biological update. Use for large watersheds (min of 5 acres of impervious area to 1 sq mile of watersheds). Can incorporate flood control elements. Dissipate flow energy at inlets. Can have a forebay for large particles. Can have a trickle channel (concrete or soft). Can have a micropool, outlet structure and trash rack. Needs an overflow embankment, vegetated side slopes and access. Outlets need an orifice plate to drain the WQCV.
Retention Pond	• Wet EDB • Retention Pond (Wet Retention Basin)	AKA a wet pond, has a permanent pool of water (from groundwater or base flow year round), with capacity above the WQCV. Generally built with a safety wetland beach and an open water zone. Vegetated side slopes, with an inlet, a forebay, trash rack, overflow embankment and an outlet with an orifice plate.
Stormwater Constructed Wetland	• Detention Pond (Wetland System) • Extended Detention Shallow Wetland • Pocket Wetland • Shallow Wetland • Wet Swale	A shallow retention pond, designed to permit the growth of wetland plants. Built to enhance stormwater quality. Requires a positive net influx of water to maintain required vegetation and microorganisms (via groundwater or base flow). Utilizes the Water Quality Capture Volume and contains a permanent pool. Has vegetated side slopes, an inlet, forebay, trash rack, outlet with orifice plate and overflow embankment. Most importantly, contains wetland plants by design (not accident).

Figure 9. Naming Categories for PWQ Features Continued.

Proposed Category	Current Names	Description (synopsis from Urban Drainage Volume III)
Sand/Rock Basin	• Infiltration Basin • Surface Sand Filter EDB • Perimeter Sand Basin (Filter) • Pocket Sand Basin (Filter) • Pocket Sand Filter • Subsurface Sand Basin (Filter) • Infiltration Trench	Similar to Bioretention, except is not designed for vegetative growth. Engineered, depressed area designed to capture and filter or infiltrate the water quality capture volume. Has to have a storage volume and ponding depth. Some need an underdrain system with geomembranes/geotextile separator fabrics when infiltration (hazardous materials underground or bed rock) is not possible. Has inlet and outlet controls. Needs cleanouts of the underdrains and vegetative side slopes. Inlets may need energy dissipation and a forebay where concentrated flows enter the basin. Outlets need an orifice plate to drain the WQCV.
Porous Pavement	• Porous Pavement Detention	LID. Allows for the movement of waters into the layers below the pavement surface. Can be volume reduction, provide treatment and slow release of the WQCV. Often part of a treatment train. Soils is critical to infiltration. Appropriate for low speed, low sediment laden runoff. Not appropriate for areas with contaminated groundwater. Contains filter material and often an underdrain and geomembrane or geotextile fabric.
Underground	• Proprietary/Manufactured System • On-Line Storage in Storm Drain (Vaults) • Water Quality Inlet with Oil/Grit separator • Water Quality Oil/Sand Separator Outlet • Water Quality Vault • Catch Basin Insert • Catch Basin Insert (Filter) • Deep Sump Catch Basin (Filter Basin) • Inlet Type C • Inlet Type D • Storm Sewer Inlet Type R • Storm Sewer/Misc. (Note Required)	Underground, proprietary and non-proprietary devices which provide treatment via sedimentation, screening, filtration, hydrodynamic separation and other physical and or chemical processes. Do not use when encountering high groundwater, hazardous ground contamination and limited access. Sizing and confined space entry are also detractors.

Terminology and the Function Location Spread Sheet:

Figure 10. Example Function Location Spread Sheet

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Functional Loc.	ClassType	Class	ENV_TYPE	SUB_ACCT_NO	CDOT_PROJ_NO	IGA	WQ_Asset	LATITUDE	LONGITUDE	Reference Point	Route Direction	Beg Ref Pt	End Ref Pt	Alt Name
CO-285D-RS000xx-EN001	003	Enviromental	Extended Detention Basin	15577	BR 2854-113	NO	EN001	39.652183	-105.081929	255.034	EB Off Ramp	254.9	255.034	#B
CO-285D-RS000xx-EN024	003	Enviromental	Extended Detention Basin	15577	BR 2854-113	NO	EN024	39.653327	-105.080878	255.062	WB Off Ramp	255.062	255.062	#C

A: Functional Loc:
This stands for Functional Location Number and will be your final product.

B: ClassType:
This is always 003

C: Class:
This is always Environmental

D: Env_Type:
Use the spread sheet drop down menus for the type of PWQ you are reporting. Consistency is key.

E: Sub_Acct_No:
This is the 5 digit Project subaccount number.

F: CDOT_Proj_No:
Project Number.

G: IGA:
Is there an IGA? This is a Yes or No column.

H: WQ_Asset:
This is where the EN001 number goes.

I: Latitude:
This is the Latitude. Needs to be 8 digits.

J: Longitude:
This is the Longitude. Needs to be 8 digits.

K: Reference Point:
This is the outlet structure.

L: Route Direction: This is the direction of traffic. This is only 2 digits (EB, WB, SB or NB)

M: Beg Ref Pt:
This is the Mile Marker starting point. Always go in the direction of traffic.

N: End Ref Pt:
This is the Mile Marker end point. Always go in the direction of traffic.

O: Alt Name:
This is a name that is unique. Example: I use the names listed in the Drainage Report to jog my memory. Could use "University NWQuad" as a name or the Project name US 285 DB or #B.

Accessing Your List of PWQ in SAP:
These are instructions on how you can check your PWQ feature that is currently in SAP.

1) Log into SAP (just like you would for your timesheet - see figure 10).
2) At the search bar on top left of the screen, enter IH06.
3) Press Enter
4) In the Class Type Field, enter 003
5) In the Class Field, enter **ENVIROMENTAL** – Type it exactly this way. Do not type ENVIRONMENTAL.
6) Press Execute (the button that looks like a green clock (or you can push F8)).
7) You now have a long list of all the PWQ features in the state (see figure 11)
8) To add additional columns: click on Settings --> Layouts --> Current
9) A box of Displayed Columns and Column Set will appear.
   - Choose what other attributes you want to see using the left/right arrows.
   - Choose Subaccount number and rearrange the displayed column order by using the up/down arrow in the Displayed Columns box
10) To include the attributes about the PWQ features: click on Settings --> Show/Hide Classifications

TIP: if you only see icons at the top of your page, simply click on the "Display Functional Location: Functional Location List" menu bar, and the headings will appear.

Figure 10. SAP Location to enter IH06.

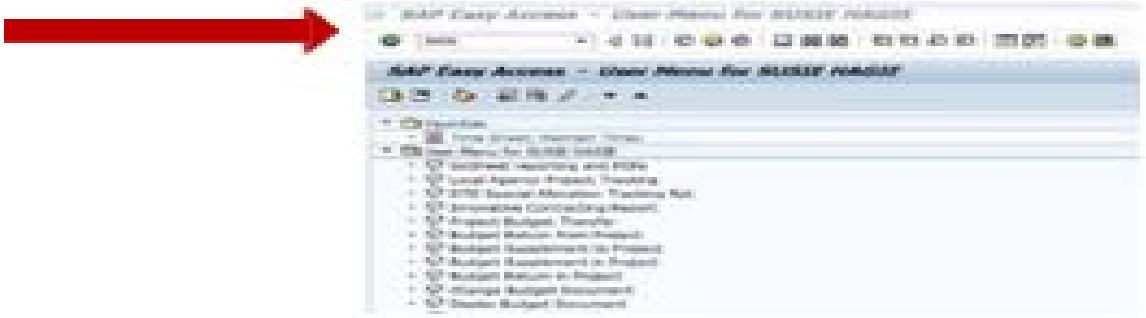


Figure 11. The long List of PWQ Features in the State.

Rg: Region

PP: Planning Plant (another word for Region)

Cost Center: The patrol

Functional Location: Functional Location Number.

Description of functional location: This is the State Highway, Mile Marker and type of PWQ.

Subnumber: Should be project subaccount #, but may be blank.

System status: CRTE means Active, InAc DLFL means inactive. You don't actually delete SAP numbers, you just deactivate them.

Environmental Structure Type: This is the PWQ type in long version.

Sub Account Number: This is the project subaccount number.

CDOT Project Number: This is project number.

IGA Assigned Y/N: This if there is an IGA.

Water Quality Asset: This is the EN number we assigned.

Latitude: This is the Latitude.

Longitude: This is the Longitude.

Quality Control Tip: Double check your Lat/Longs which are already listed in SAP. Copy/Paste the Lat/Longs into Google Maps to make sure we are referring to the right locations. A couple of mine were way off in the wrong location.

Resources to help with this process:

If you need help with this, there are several resources available to you. Phone a friend at:

- Amber Williams – HQWQ at 303-757-9814
- Susie Hagie – R1 at 303-757-9932

A.3 OTIS Layers Update Procedures for WQ Structures and PWQ Area Treated

A.3.1 Background

OTIS displays the PWQ information in two layers:

1. WQ Structures
2. PWQ Area Treated

The WQ Structures layer shows the location of the PWQ Facility; the PWQ Area Treated layer shows the geospatial representation of the area treated by that structure. Additionally, each of these layers has attributes. Attributes are information about the structure. For example, the PWQ Area Treated has an attribute that is the number of acres treated by the structure. The process for getting this information into OTIS is outlined below.

A.3.2 Consultant Provided Deliverables

In the below instructions the consultant must provide CDOT with deliverables. These are:

1. Populated WQ Structures feature class and attribute data
2. Populated PWQ Area Treated feature class and attribute data

3. PDF Map showing the structure location (point depicting deliverable 1 above) and the PWQ Area Treated (polygon shape depicting deliverable 2 above).

4. Excel (xls) spreadsheet that shows the attribute tables from deliverable #1 and #2

Region staff may or may not have the software and/or GIS experience necessary to review deliverables #1 and #2. Therefore, the consultant must also provide deliverables #3 and #4 which presents the Region staff with pdf and xls documents for review. Deliverables #1 and #2 are in the format necessary for HQ GIS staff to update the OTIS layers. The following process outline the steps the consultant will follow to provide the above deliverables, the steps the regions will follow to review, and then provide the data to the HQ PWQ Program Manager and HQ GIS staff.

A.3.3 PWQ Structures/Area Treated GIS Layers Procedure

1. Region assigns SAP Functional Location number per the SAP procedure (see PWQ Attachment A, Section A.2 above).
2. CDOT Region provides blank geodatabase for both PWQ Structure and PWQ Area Treated layers to the consultant (available on CDOT's PWQ website)
3. Consultant populates blank feature classes (PWQ Structure(s) and PWQ Area(s) Treated) with spatial and attribute data
4. Consultant creates pdf map showing PWQ Structure(s) and PWQ Area(s) Treated (with aerial imagery)
5. Consultant also provides xls of attribute data for PWQ Structure(s) and PWQ Area(s) Treated.
6. Consultant sends deliverables to region staff for review
7. CDOT Region staff reviews pdf map and attribute data xls for accuracy/completeness.
8. Repeat process 1-7 as necessary until CDOT region approves
9. Region provides info to HQ (geodatabase/pdf map/attribute xls and attachments including Operation and Maintenance data, Intergovernmental Agreements for maintenance (IGAs), Site Plans, "As-Builts", PWQ report, etc.), in one of two ways:
   a. Puts in ProjectWise and provides PWQ Program Manager and CDOT GIS Section Manager or designee with links to each document
   b. Put in shared folder provided by GIS section
10. PWQ Program Manager (Amber Williams) sends to GIS Section Manager or designee and a GIS consultant (until GIS update is complete)
11. The GIS consultant includes in GIS layer update (once update is complete, HQ GIS section updates OTIS data quarterly)

PWQ Attachment B – Updated Summary of the PWQF Audit Findings and CDOT Responses

PWQ Attachment C – PWQ Inspection and Cost Estimate Test Examples

Order of Examples:

COLORADO
Department of Transportation
Division of Transportation Development

Permanent Water Quality Control Measure

Inspection Form for Compliance

CDOT Engineering Region: 1 **Location:** NW corner of I-70 and 40th Ave.
CDOT Maintenance Region: 5
SAP Functional Location #: CO-070A-RS00341-EN001 **Date:** 7/11/16

Inspector(s) Name(s): Jeremiah Unger, Wayman Echols

Weather (Date of Inspection): Sunny, 72
Date of Last Run-off Event: 7/3/2016 **Amount (Equivalent snowmelt):** NA **Inches:** 0

Inspection Reason: Test
MS4 Boundary (Municipality) WheatRidge **Facility review for Design** YES
Available Documents at Inspection: IGA Not available As-builts Not available O&M Manual Not available

INSPECTION SCORING - For each facility inspection item, insert one of the following scores:
0 = No deficiencies identified
1 = Monitor (potential for future problem)
2 = Routine maintenance required
3 =Immediate repair necessary (or design change)
N/A = Not applicable

INSPECTION REASON: Please insert one of the following: Routine Annual Inspection, Post-Storm Inspection, Test, Audit or Citizen Initiated Inspection

INSPECTIONS OF FEATURES

Control Measure (CM) Type: EDB

Score		Overall
1.) Inflow Points		1.20
1	Riprap Displaced	
0	Erosion Present/Outfall Undercut	
2	Sediment Accumulation	
1	Structural Damage (pipe, end-section, etc.)	
2	Woody Growth/Noxious Weeds Present	
Comments		
2.) Forebay/Infiltration Basin		1.50
2	Sediment/Debris Accumulation	
1	Concrete Cracking/Failing	
NA	Drain Pipe/Wier Clogged (not draining)	
NA	Wier/Drain Pipe Damage	
NA	Infiltration Media Infiltration Rate	
Comments	This should be looked at for maintenance access and installation of concrete structure to allow ease of maintenance	
3.) Trickle Channel/WQ Swale		1.50
2	Sediment/Debris Accumulation	
1	Concrete/Riprap Damage	
3	Woody Growth/Weeds Present	
0	Erosion Outside Channel	
NA	Underdrain System	
Comments	Wetland vegetation taking hold, cut/remove saplings near trickle channel and all concrete structures.	
4.) Bottom Stage (Micro-Pool)		
NA	Sediment/Debris Accumulation	
NA	Woody Growth/Weeds Present	
NA	Bank Erosion	
NA	Mosquitoes/Algae Treatment	
NA	Potential Illicit Discharge (ID) Fill out ID form B	
Comments		
5.) Outlet Works/Undergroung BMP		1.25
2	Sediment/Trash Rack/Well Screen Clogged	
1	Structural Damage (concrete,steel,subgrade)	
0	Orifice Plate(s) Missing/Not Secure	
NA	Manhole Access (cover, steps, etc.)	
2	Woody Growth/Weeds Present	
Comments	Remove temporary rock sock near outlet, Outlet needs a permenant pool to operate more efficiently.	
6.) Emergency Spillway		
NA	Riprap Displaced	
NA	Erosion Present	
NA	Woody Growth/Weeds Present	
NA	Obstruction/Debris	
Comments	Could not identify	
7.) Upper Stage (Dry Storage)		2.00
2	Vegetation Sparse	
3	Woody Growth/Noxious Weeds	
3	Standing Water/Boggy Areas	
2	Sediment Accumulation	
0	Erosion (banks and bottom)	
2	Trash/Debris	
Comments	Weeds and re-vegetation/stabilization remove downed construction fence, remove downed	
8.) Miscellaneous		1.00
NA	Encroachment in Easement Area	
NA	Graffiti/Vandalism	
NA	Gates/Fencing	
NA	Burrowing Animals/Pests	
0	Signage (SAP/No Trespassing)	
2	Maintenance Access	
NA	Other	
Comments	Needs formalized maintenance access.	

Inspection Summary / Additional Comments

Re-vegetation of side slopes, there is a ring of in-active vegetation around pond with large (2-4") aggregates. Recommend removal of aggregate and import of suitable soils. Hairy Willow Herb identified class A weed, multiple class B weeds identified ~20% coverage. Volunteer cottonwood trees need to be removed from around concrete structures. Clean forebay, pipe FES, trickle channels, and pond outlet structure 5" maximum sediment depth. No micropool exist recommend installation of micropool to deter sediment forcing its way into the outlet box beyond the orifice plate. High water table several faculative and obligate wetland species identified, flowing water is identified leaving the pond with no apparent inflow from the inlet pipes. It appears there is evidence of high water table looking at areas at similiar elevations across the frontage rd. There is an unidentified monitoring or pressure relief pipe identified that also indicates the knowledge of a high water table. No as-builts identified, these wetlands need to be formalized or an underdrain installed to alleviate water upwelling. No maintenance access to forebays or outlet with large equipment(Vac Truck), all small equipment/hand work. The sump grouted rip-rap will need a vacuum unit to perform regular maintenance, recommend redesign of forbay area with formalized maintenance access points.

Signature of Inspector: Jeremiah Unger

OVERALL FACILITY RATING 1.41 53.1%

COLORADO
Department of Transportation
Division of Transportation Development

Permanent Water Quality Control Measure

Estimate

CDOT Engineering Region: 1 **Location, Mile-Post:** NW corner of I-70 and 40th Ave.
CDOT Maintenance Section: 3
I.D. Number/SAP Work Order #: CO-070A-RS00341-EN001 **Date:** 7/15/16

Estimator Name: Jeremiah Unger

MS4 Boundary (Municipality): WheatRidge
Control Measure(CM) Type: EDB

Contractor Compliance	$12,375.02	CDOT Compliance	$13,794.61
Contractor Annual	$5,223.01	CDOT Annual	$9,046.05
Total Contractor Cost	$17,598.03	Total CDOT Cost	$22,840.66

Total Acreage of Site	1.46 Acres	Inspection	Debris Control	Mowing	Herbicide	Minor sediment removal	
Annual Routine Contractor Costs:		$464.63	$26.28	$43.80	$80.30	$4,608.00	Static hours crew
Total Routine Contracted Costs:	$5,223.01						48
Annual Routine CDOT Costs:		$467.20	$29.20	$21.68	$847.97	$7,680.00	Static hours crew
Total Routine CDOT Costs:	$9,046.05						48

Disclaimer: Contractor cost do not include costs for CDOT employee overview/inspections of work performed. **Not for use in Engineering.**

Compliance Costs:

Materials:	Contracted Quantity	Contracted Cost per Quantity	Contracted Cost	CDOT Quantity	CDOT Cost per Quantity	CDOT Cost	Notes
Rock Sock	1	$39.00	$39.00	1	$39.00	$39.00	
Erosion Log (Waddle 12")	182	$4.27	$777.14	182	$4.27	$777.14	
Soil conditioning	0.32	$1,688.00	$540.16	0.32	$1,688.00	$540.16	
Seeding/Native drill	0.32	$730.00	$233.60	0.32	$730.00	$233.60	
Mud mats (VTC) alternative	1	$225.00	$225.00			$0.00	
VTC Pad			$0.00	1	$2,079.67	$2,079.67	CDOT will install permenant VTC per SOP of SAM crew
Spray on Mulch Blanket	0.32	$4,093.00	$1,309.76	0.32	$4,093.00	$1,309.76	
Disposal	10	$215.00	$2,150.00	10	$215.00	$2,150.00	
Total Materials			$5,274.66			$7,129.33	

Equipment:	Contracted Hours	Contracted Cost per Day	Contracted Cost	CDOT Hours	CDOT Cost per Hour	CDOT Cost	Notes
Vac Truck	8	$325.00	$2,600.00	16	$217.36	$3,477.76	
Walk Behind Skid	1	$102.00	$102.00			$0.00	CDOT Labor
Chainsaw	1	$24.00	$24.00	1	$15.00	$15.00	
Broom	2	$116.00	$232.00	16	$23.90	$382.40	
			$0.00			$0.00	
			$0.00			$0.00	
			$0.00			$0.00	
			$0.00			$0.00	
Total Equipment	12		$2,958.00	33		$3,875.16	

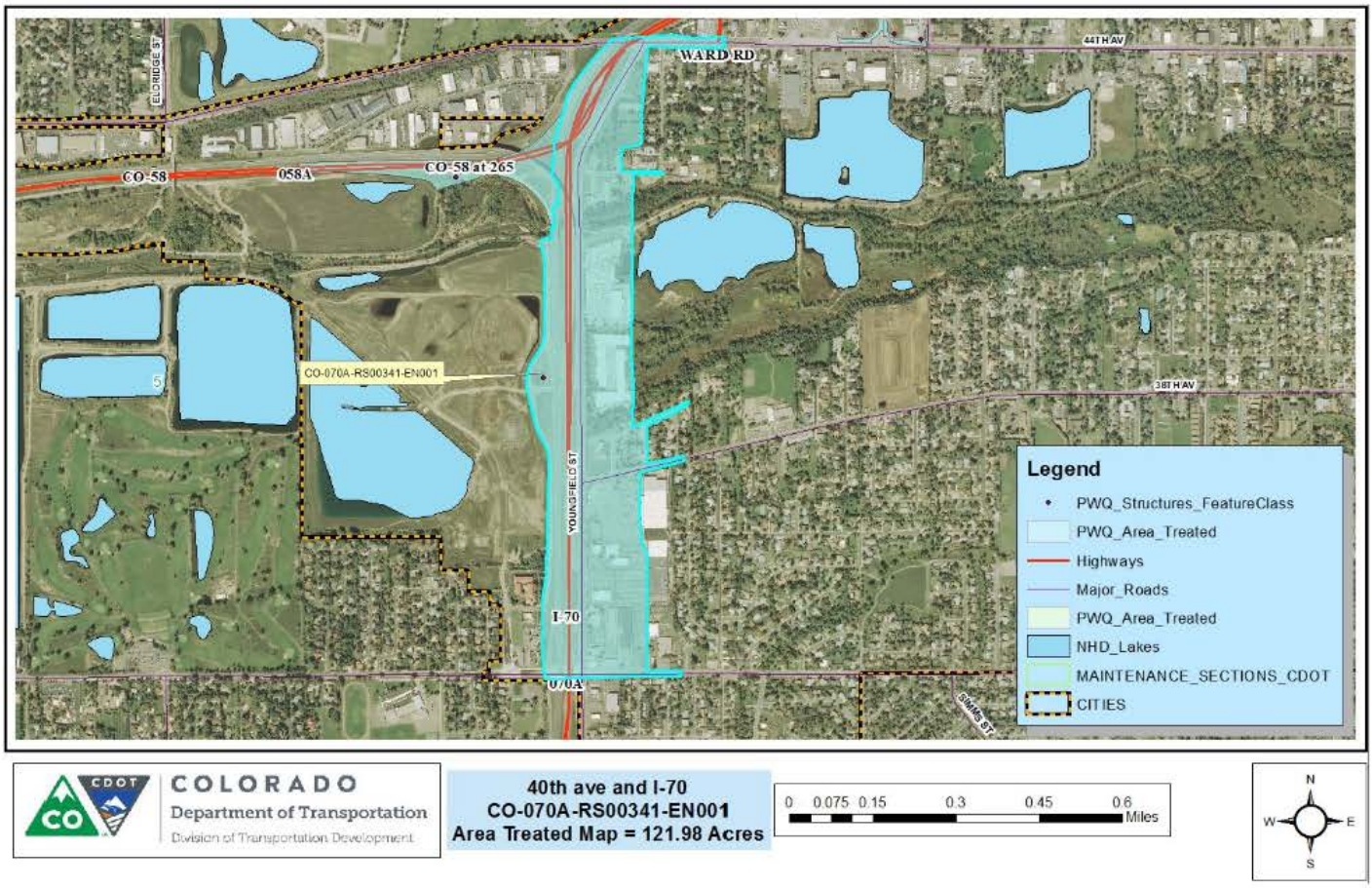
Labor:	Contracted Hours	Contracted Cost per Hour	Contracted Cost	CDOT Hours	CDOT Cost per Hour	CDOT Cost	Notes
Laborer(TM1):	8	$20.00	$234.48	32	$29.31	$640.00	
Journey Man(TM2):	8	$24.00	$299.04	8	$37.38	$192.00	
Lead Operator(HEO4):	8	$28.00	$281.12	8	$35.14	$224.00	
Supervisor(TM3):		$32.00	$0.00	2	$39.78	$64.00	
TECS:	2	$32.00	$147.72	2	$73.86	$64.00	
Miscellaneous:			$0.00			$0.00	
Total Labor	26		$962.36	52		$1,184.00	

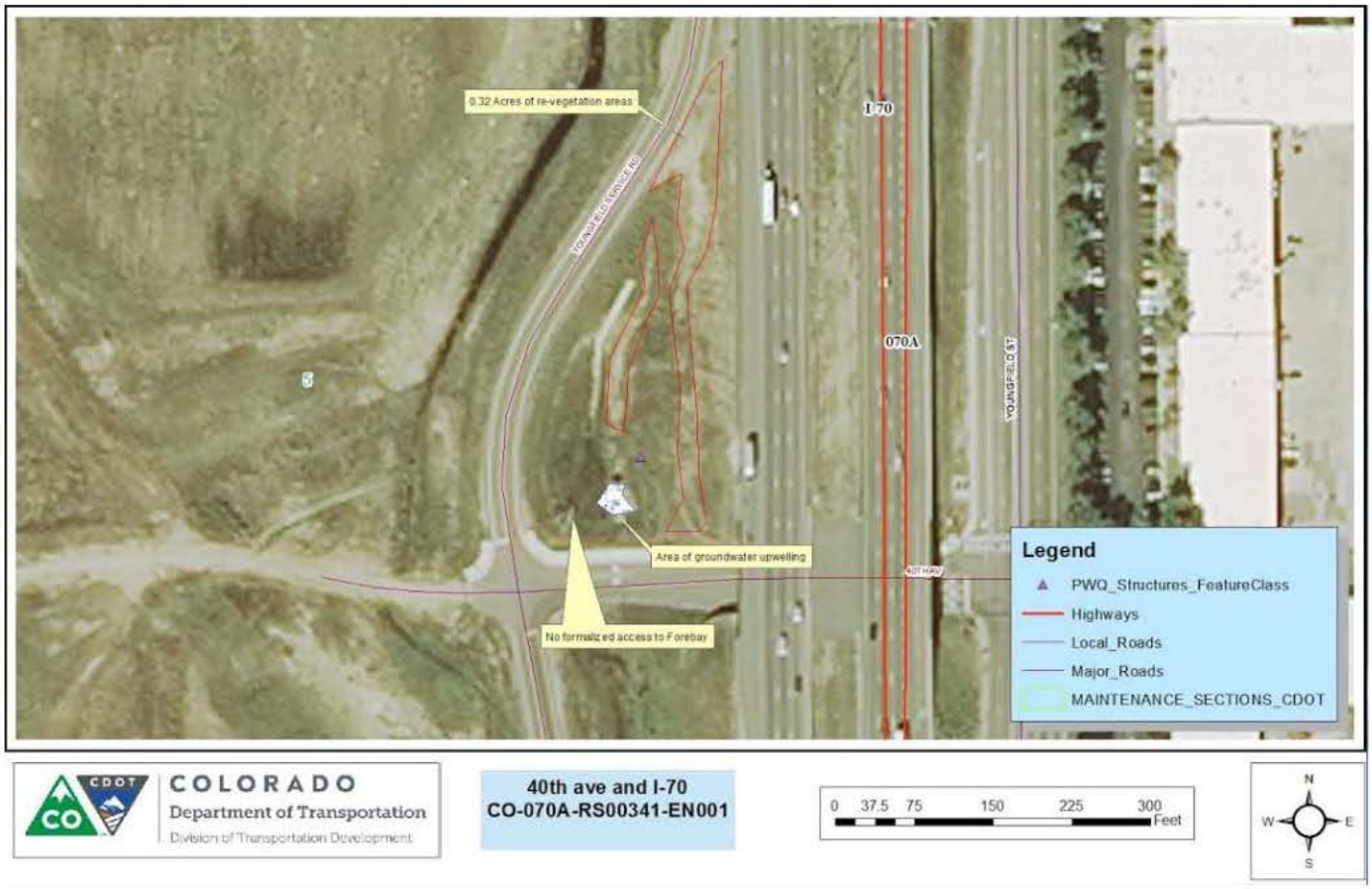
Miscellaneous:	Contracted		Contracted Cost	CDOT		CDOT Cost	Notes
USACE Permit/Review	1		$2,000.00	8	73.86	$590.88	Wetland determination
Engineer Review	4	$105.00	$420.00	4	63.81	$255.24	Review of design
HydroGeo Review	8	$95.00	$760.00	8	$95.00	$760.00	
Total Misc.			$3,180.00			$1,606.12	

Estimate Summary / Additional Comments

Cost for Haul Rd. Install needs to come from Engineer. Cost for Mircro-Pool install comes from Engineer.

Total Contracted Compliance Construction Cost $12,375.02 **Total Estimated CDOT Compliance Construction Cost** $13,794.61


WARD RD
44TH AV
ELDRIDGE ST
CO-58
058A
CO-58 at 265
CO-070A-RS00341-EN001
38TH AV
YOUNGFIELD ST
I-70
070A
Legend
PWQ_Structures_FeatureClass
PWQ_Area_Treated
Highways
Major_Roads
PWQ_Area_Treated
NHD_Lakes
MAINTENANCE_SECTIONS_CDOT
CITIES
COLORADO
Department of Transportation
Division of Transportation Development
40th ave and I-70
CO-070A-RS00341-EN001
Area Treated Map = 121.98 Acres
0 0.075 0.15 0.3 0.45 0.6
Miles
N
W
E
S


0.32 Acres of re-vegetation areas
I-70
070A
YOUNGFIELD ST
Area of groundwater upwelling
No formalized access to Forebay
Legend
PWQ_Structures_FeatureClass
Highways
Local_Roads
Major_Roads
MAINTENANCE_SECTIONS_CDOT
COLORADO
Department of Transportation
Division of Transportation Development
40th ave and I-70
CO-070A-RS00341-EN001
0 37.5 75 150 225 300
Feet
N
W
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	A	B	C	D	E	F	G	H	I	J
1	**PWQ Attachment B: CDOT response to EPA's VII. Appendix B: New Development/Redevelopment Inspection and**									
2	**Maintenance Summary Table**									
3	**CDOT Region**	**EPA Attachment B Summary Number**	**SAP ID or Functional Location**	**PWQF Description**	**EPA Photos Number**	**CDOT's Previous Response**			**Finding Status**	**CDOT's Current Repsonse**
4	1	1	CO-006G-RS00025- EN001	South side of 6th Avenue and Ulysses Street intersection in Golden, CO Roadside swale, extended rip rap apron, two check dams, a box culvert and discharge pipe into Lena Gulch; it was installed in 2008.	286 – 291	**Clarification:** EPA notes that the concrete apron along Lena Gulch had eroded away. This is correct, but occurred prior to the EPA Audit. CDOT staff explained to EPA that there had been erosion of the concrete apron prior to the Audit and it was repaired by CDOT maintenance. The caption in EPA Photo 287 stated that the white pipe shown in the photo is the outfall from CDOT's PWQF and the finding states CDOT staff said CDOT had extended the pipe. This is incorrect. The white pipe originates in a local business parking lot. CDOT's outfall is a concrete pipe that is part of the Lena gulch wall and is visible from the east side of the gulch. This is the pipe that was previously repaired and a photo was provided. In response to the erosion EPA identified along the riprap apron and concrete apron along Lena Gulch, CDOT repaired the inlet located at Ulysses Street in Golden on 11/23/2015. CDOT also extended the rock check dams on this date and included this photo in the deliverable. The bare area shown in EPA photo 289 was disturbed during CDOT repairs to the outfall. Since then, the area vegetation has returned and is thick, so reseeding was not necessary as part of the corrective action.			Completed	Work completed 4/22/2016
5	1	2	-006G-RS00023EN006	Southeast side of the 6th Avenue and Jefferson County Parkway intersection in Golden, CO An extended detention basin with an inlet on the southeast end that flows to a box culvert with an extended rip rap apron; it was installed in 2008.	293 – 300	The track hoe and trucks started the excavation in the area (EPA photos 298 and 294) on 11/23/2015. A vac truck will be used to clear the sedement in the out fall from the pipe (EPA photo 300).			Completed	Work completed 2/25/2016. Work started 11/13/2015. Work order showed that on 11/13 the drainage structure was cleaned/repaired and between 2/16 and 2/25 the pond was cleaned out using a track hoe and shovel work on the outlet/inlet pipe.
6	1	3	CO-070A-RS00341EN004	Northwest corner of 44th Avenue and the on ramp to westbound I70 in Arvada, CO. Extended detention basin with a micro pool	N/A	This asset was located in OTIS by Latitude/Longitude at the time of inspection (4/1/2015). The layer containing the SAP number (Functional Location) was turned off. Thus not showing the SAP numbers. This has been corrected (11/10/2015).			In Progress	CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as applicable.
7	1	4	CO-070A-RS00341EN005	Northeast corner of 44th Avenue and the on ramp to westbound I70 in Arvada, CO Extended detention basin with a micro pool	N/A	This asset was located in OTIS by Latitude/Longitude at the time of inspection (4/1/2015). The layer containing the SAP number (Functional Location) was turned off. Thus not showing the SAP numbers corrected (11/10/2015).			In Progress	CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as applicable.
8	1	5	CO-083A-RS00083EN002	Stormceptor on the east side of Parker Road between Fair Place and Arapahoe Road	N/A	The maintenance manual figures 1 and 2 labels are typos. The manual has been edited to correct the labeling (11/19/2015). This was a result of how the maintenance manuals were created in 2010. Since then CDOT has adopted a different process that eliminates the error. Templates for these new manuals were previously submitted to EPA. This asset was located in OTIS by Lat/Long at the time of inspection (4/1/2015). The layer containing the SAP number (Functional Location) was turned off, thus not showing the SAP numbers. This has been corrected as well as two PWQF that shared a point in OTIS (11/19/2015).			In Progress	CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as applicable.
9	1	6	CO-076A-RS00011EN002	Grass Swale located in the median of I76 between Tennyson Street and Lowell Street in Denver, CO	N/A	The structure was inspected 11/19/2015 and any maintenance identified will be scheduled as a priority.			Completed	Inspected by Water Quality Specialist on 11/20/2016 and found to be well with in the range of not needing maintenance. Vegetation was adequate and drains were clean or just barely dirty.
10	1	7	CO-076A-RS00011EN003	Grass swale located in the median of I76 between Lowell Street and Federal Blvd. in Denver, CO	N/A	The structure was inspected 11/19/2015 and any maintenance identified will be scheduled as a priority.			Completed	Inspected by Water Quality Specialist on 11/20/2016 and found to be well with in the range of not needing maintenance. Vegetation was adequate and drains were clean or just barely dirty.
11	1	8	CO-076A-RS00011EN004	Grass swale located in the median of I76 between Lowell Street and Federal Blvd. in Denver, CO	N/A	The structure was inspected 11/19/2015 and any maintenance identified will be scheduled as a priority.			Completed	Inspected by Water Quality Specialist on 11/20/2016 and found to be well with in the range of not needing maintenance. Vegetation was adequate and drains were clean or just barely dirty.
12										
13	2	1	8179 / SAP# CO-021B- RS00012-EN002	Contech vault at Union Blvd. and Powers Blvd. in Colorado Springs, CO	N/A	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to perform: accessing the PWQ with loader and material to fix the settling of the rip/rap if accessible by equipment.			Completed	Completed 12/3/2015
14	2	2	8119 / SAP# CO-021B- RS00012-EN001	Pond at Union Blvd. and Powers Blvd. in Colorado Springs, CO	N/A	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to perform: Catch Basin Cleaner to vactor out sediment if accessible with truck.			Completed	Completed 12/3/2015
15	2	3	8124	South Filterra on Powers Blvd. north of Woodmen Rd. in Colorado Springs, CO	N/A	N/A. EPA stated that the CDOT inspector noted that the vegetation inside the Filterrra was difficult to maintain, but then stated, "There was little sediment build-up inside the Filterra and none observed on the roadway. Based on past CDOT inspections and EPA's observations, the Filterra had been maintained in the last two years."			Completed	No action necessary
16	2	4	8125	North Filterra on Powers Blvd. north of Woodmen Rd. in Colorado Springs, CO	N/A	N/A. EPA stated that the CDOT inspector noted that the vegetation inside the Filterrra was difficult to maintain, but then stated, "There was little sediment build-up inside the Filterra and none observed on the roadway. Based on past CDOT inspections and EPA's observations, the Filterra had been maintained in the last two years."			Completed	No action necessary
17	2	5	SAP# CO-021B- RS00006-EN001	Powers Blvd. and Dublin Blvd. grassy swale and rip rap in Colorado Springs, CO	N/A	This structure has been added to the Region 2 WPCMs individual inventory. It was added to the statewide SAP inventory along with other PWQFs as described in the response to finding 1 ND. This structure was inspected on 11/19/2015 and no maintenance was required.			Completed	Completed and addressed in CDOT 12/11/2015 submittal to EPA.
18	2	6	8135 / SAP# CO-025A-RS00177- EN001	Southeast corner of Garden of the Gods Rd. and I25 detention basin with micropool in Colorado Springs, CO	N/A	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to preform: Catch Basin Cleaner to vactor out the outlet structure, weed chop, remove trash.			Completed	Completed 12/3/2015
19	2	7	8134 / SAP# CO-025A-RS00177- EN003	Vault on the southwest side of Garden of the Gods Rd. and I-25 in Colorado Springs, CO.	N/A	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to preform: Catch Basin Cleaner to vactor out in front of inlets, weed chop, remove trash.			Completed	Completed by 12/4/2016
20	2	8	8136 / SAP# CO-025A-RS00177- EN002	Pond with micropool on the northeast side of Garden of the Gods Rd. and I-25 in Colorado Springs, CO	31-34	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to preform: Catch Basin Cleaner to vactor out in front of inlets, weed chop, remove trash.			Completed	Completed by 12/2/2016
21	2	9	8149 / SAP# CO-025A-RS00177- EN004	Pond on the northwest side of Garden of the Gods Rd. and I-25 in Colorado Springs, CO.	35-39	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to preform: Catch Basin Cleaner to vactor out in front of inlets, weed chop, remove trash.			Completed	Completed by 12/4/2016
22	2	10	8166 / SAP# CO-025A- RS00179-EN004	Pond series southeast of Woodmen Rd. and I-25 in Colorado Springs, CO. The structure consisted of two ponds followed by a series of four drop structures into Cottonwood Creek.	40-51	The SAP number is listed in SAP ID or Functional Local column to the left after the SWIT record number. Maintenance to preform: Catch Basin Cleaner to vactor out in front of inlets, weed chop, remove trash.			Completed	Completed 9/19/2016 On Dec 7th, 2015 the ponds had trash removed, vegetation mowed, and a few trees removed. March 3rd, 2016 ponds were visited again and only minor trash removal and vegetation management was conducted. CDOT crews comepleted removing sediment 9/19/2016.
23	2	11	SAP# CO-096A- RS00069-EN001	4th Street Bridge vault and grassy swale in Pueblo, CO. The structure was a Baysaver 3000 stormwater vault that consisted of three vaults that flowed in series.	473-485	This structure has been added to the Region 2 WPCMs individual inventory. It will be added to the statewide SAP inventory along with other PWQFs as described in the response to finding 1 ND. In the old procedures when a project was completed, the RWQPM would assign a SAP number for that project's PWQ structures. When this project was completed the RWQPM at that time was preparing to leave CDOT. So these PWQ structures were not assigned SAP numbers. When the new RWQPM was hired she was unaware of these structures since they became the responsibility of the city municipality. The WPCM has located the IGA, as-builts, and structure details for this unit. All of these documents are on file. Contact will be made with the City of Pueblo Storm water management supervisor to discuss the corrections needed and the timeframe to get repairs completed.			In Progress	CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as applicable.
24	2	12	8173 / SAP # CO-050B- RS00001-EN001	Highway 50 and Fountain Creek pond in Pueblo, CO	486-492	This structure does have an SAP number listed and is in the OTIS inventory. The Record number 8173 EPA received from Region 2 representative was incorrect. The correct SAP number is listed in the SAP ID or Functional Location column to the left. This area falls under the Division of authority CRS 43-2-135 (e). Contact will be made with the City of Pueblo Storm Water Management Supervisor the week of 11/23/2015 or ASAP after previously mentioned date to discuss the corrections needed and the timeframe to get repairs completed. In the event CDOT needs to perform the maintenance, it should be completed prior to December 31, 2015. Remove all trash, debris, and sedimaent from sediment pond.			Completed	Completed on 12/8/2015

	A	B	C	D	E	F	G	H	I	J
25	**CDOT Region**	**EPA Attachment B Summary Number**	**SAP ID or Functional Location**	**PWQF Description**	**EPA Photos Number**	**CDOT's Previous Response Summary**			**Finding Status**	**CDOT's Current Repsonse**
26	2	13	SAP# CO-050A- RS00346-EN001	Willis Pond in Pueblo, CO	493-504	This structure has been added to the Region 2 WPCMs individual inventory. It will be added to the statewide SAP inventory along with other PWQFs as described in the response to finding 1 ND. This area possibly falls under the state statute CRS 43-2-135 (e). Contact will be made with the City of Pueblo Storm Water Management Supervisor the week of 11/23/2015 or ASAP after previously mentioned date to discuss the corrections needed and the timeframe to get maintenance completed. Remove all trash and debris from sediment pond, thin out vegetation to acceptable levels by mowing and removal of trees. (This pond area has yet to hold water and to remove ALL vegetation would create erosion issue that currently do not exist) The inlet of CDOT's drain will be reconnected and secured to prevent future displacement, Debris and sediment will be removed from the outlet to expose the holes in the bottom and the large amount of debris on the overflow structure will be removed.			In Progress	CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as applicable.
27										
28	3	1	CO-070B-RS00004EN002	Detention Pond (Wetland System)	N/A	Inspections are performed by the Local Agency per State Statue 43-2-135.			In Progress	Addressed in CDOT 12/11/2015 submittal to EPA. CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as
29	3	2	CO-070B-RS00004EN003	On-Line Storage in Storm Drain	N/A	Inspections are performed by the Local Agency per State Statue 43-2-135.			In Progress	Addressed in CDOT 12/11/2015 submittal to EPA. CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as
30	3	3	CO-070B-RS00004EN004	Proprietary/Manufactured System	N/A	Inspections are performed by the Local Agency per State Statue 43-2-135.			In Progress	Addressed in CDOT 12/11/2015 submittal to EPA. CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as
31										
32	4	1	Unknown	Detention basin adjacent to Highway 7 and a parking lot for the Boulder Valley School District; installation was completed in 2014.	311-314	CDOT R4 will notify Boulder to clean the outlet and fill in the rilling. This area falls under the Division of authority CRS 43-2-135 (e). Remove all trash and debris from outlet and correct rilling with the use of frontend loader, Skid steer loader, Catch Basin Cleaner (vac-truck) and if needed a grade-all loader. CDOT R4 will submit forms to EPB by 12/15/2015 for inclusion in the OTIS database and mapping tool and to obtain a SAP number.			In Progress	CDOT is working on establishing a new process and policy for local agency maintained PWQF. This location will be addressed once the policy/procedure is in place including CDOT requesting any past maintenance records and performing a baseline inspection of the PWQF. Action items for maintenance needs that will be delivered to the local agency as applicable.
33	4	2	Unknown	Extended detention basin with a micropool near Highway 119 and Jay Road; it was installed in 2013.	315-322	The micropool was detaining water as designed. EPA was provided with the plans. Micropools are 3-4 feet deep and will hold water until mechanically removed. This is a standard industry practice. For example Urban Drainage and Flood Control District Manual Volume 3 Treatment Fact Sheet 5 shows a minimum micropool depth of 2.5 feet. CDOT Maintenance will mobilize forces the week of 11/23/15 to correct all erosion, remove all sediment and debris. Vegetation was intended to be growing in the discharge basin as designed and will not be removed. CDOT R4 will submit forms to EPB the week of 11/23/15 for inclusion in the OTIS database and mapping tool and to obtain a SAP number.			Completed	No action necessary
34	4	3	Unknown	Extended detention basin with a micropool near Highway 119 and Niwot Road; it was installed in 2013.	315-322	The micropool was detaining water as designed (see description above for why this is so). EPA was provided with the plans. CDOT Maintenance will mobilize forces the week of 11/23/15 to correct all erosion, remove all sediment and debris. CDOT R4 will submit forms to EPB the week of 11/23/15 for inclusion in the OTIS database and mapping tool and to obtain a SAP number.			Completed	No action necessary
35										
36	5	1	CO-160A-RS00093EN001	Extended detention basin w/ micropool or water quality inlet with an oil/grit separator (conflicting information)	N/A	Region 5 performed inspections up until the ponds were formally transferred to City of Durango in 2012 per an IGA City of Durango has provided their inspections to CDOT. The City includes this structure on their yearly maintenance schedule. The misidentification of the structure type may be an error in communication about nomenclature between the city and CDOT for this particular pond. In the past the City resolved the differences between the CDOT and City numbering systems by physically identifying (painting) numbers on the structures per the MTCE manual a couple of years ago. A similar fix could be implemented for the pond type.			Completed	The City of Durango has submitted to CDOT their inspections for the 19 ponds located along this stretch of US 160. Some of the City inspections note their pond # and not the CDOT SAP #. CO-160A-RS000094EN010 corresponds to City of Durango Pond 19. CDOT has labeled all of the PWQ structures with the SAP # so that City of Durango can include them in future inspections.
37	5	2	CO-160A-RS00094EN001	Surface sand filter, extended detention basin or infiltration basin and water quality inlet with an oil/grit separator (conflicting information)	N/A	Region 5 performed inspections up until the ponds were formally transferred to City of Durango in 2012 per an IGA City of Durango has provided their inspections to CDOT. The City includes this structure on their yearly maintenance schedule. The misidentification of the structure type may be an error in communication about nomenclature between the city and CDOT for this particular pond. In the past the City resolved the differences between the CDOT and City numbering systems by physically identifying (painting) numbers on the structures per the MTCE manual a couple of years ago. A similar fix could be implemented for the pond type.			Completed	The City of Durango has submitted to CDOT their inspections for the 19 ponds located along this stretch of US 160. Some of the City inspections note their pond # and not the CDOT SAP #. CO-160A-RS000094EN010 corresponds to City of Durango Pond 19. CDOT has labeled all of the PWQ structures with the SAP # so that City of Durango can include them in future inspections.
38	5	3	CO-160A-RS00094EN010	Extended detention basin w/ micropool.	N/A	Region 5 performed inspections up until the ponds were transferred to City of Durango in 2012. City of Durango has provided their inspections to CDOT. The City includes this structure on their yearly maintenance schedule.			Completed	The City of Durango has submitted to CDOT their inspections for the 19 ponds located along this stretch of US 160. Some of the City inspections note their pond # and not the CDOT SAP #. CO-160A-RS000094EN010 corresponds to City of Durango Pond 19. CDOT has labeled all of the PWQ structures with the SAP # so that City of Durango can include them in future inspections.

COLORADO
Department of Transportation
Division of Transportation Development

Attachment 5. Training Program

Introduction and Purpose:

This is the response to EPA's audit request to see more training in CDOT's MS4 Program. A Training Program was developed and a Program Description Document has been drafted (See Attachment 5A). It includes a table that details the existing and proposed training courses called the **CDOT Water Quality Training Curriculum** to support the MS4 Program. This includes explanations of how existing courses will be modified to address the MS4 audit corrective actions. CDOT's Municipal Separate Storm Sewer System (MS4) permit compliance philosophy is that environmental and MS4 Permit compliance starts with effective and comprehensive training and outreach.

As part of this training program development and in response to EPA's Audit suggestion, a gap analysis was done and a survey was performed (See Training Attachment 5C at the end of this section) to identify what additional courses are needed and which existing courses need modification to comply with the new MS4 permit and to satisfy Audit Corrective Actions. The Gap analysis consisted of region interviews, internal meetings, and the Survey included as Training Attachment 5C – CDOT HQ Water Quality Training Survey and Responses. A risk tool was developed (see Training Attachment 5B) to identify the priority and need for training development on the identified risks. This helps CDOT decide where to best put limited resources based on regulatory and environmental risk.

This portion of the submittal addresses CDOT's MS4 Permit training program Corrective Actions (C) and Recommended Actions (R) as listed in EPA's Preliminary Report. Audit findings specifically addressed by CDOT's Water Quality Training program include the following:

- 2PM – CDOT Headquarters and Regional staff are not consistently aware of the requirements in the Stormwater Management Programs, and the Stormwater Management Programs are not being consistently implemented.
- 3PM – CDOT has not ensured training for staff on requirements of the MS4 permit and associated CDOT programs as necessary to achieve compliance with the conditions of the permit.
- 4PM – The Permit boundaries were unclear to several CDOT personnel.
- 1ID – CDOT does not have adequate legal authority for illicit discharges, as required to have been submitted with CDOT's permit application.
- 1CS -The Standard Specification does not require stop work orders be issued for discharges to state waters or other egregious non-compliance instances.
- 2CS – CDOT failed to ensure compliance with the Construction General Permit,

enforce according to the Standard Specifications, and implement sanctions for chronic failures at design-bid (and design build) projects.

- 3CS - CDOT failed to follow the Standard Specifications procedures for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions beyond 48 hours.
- 4CS - CDOT has no formal mechanism to address chronic noncompliance by contractors as long as corrective actions occur within 48 hours.
- 5CS - Contractors' failure to meet Construction General Permit and Standard Specifications requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.
- 1ND – The inventory of CDOT permanent water quality features (PWQFs) was incomplete and inaccurate.
- 2ND – CDOT does not have a complete list of permanent water quality features (PWQFs) with Intergovernmental agreements (IGAs) and is not ensuring long-term maintenance or proper operation and maintenance of PWQFs with IGAs.
- 3ND – CDOT was not ensuring long-term maintenance of PWQFs.
- 1PP - CDOT maintenance facilities were not fully implementing facility runoff control plans (FRCPs), updating or amending FRCPs, and FRCPs did not address all required items.
- 2PP - 18500 East Colfax Ave. maintenance facility did not have their most recent FRCP on-site. . . Ensure how this will occur in the future.

Water Quality Training Overview

Education and outreach is key to environmental compliance at numerous levels within CDOT that affect water quality and CDOT right-of-way ecology.

The objectives of the Water Quality Training Program include the following:

- Empower MS4 managers and stormwater mitigation/landscape designers to develop training modules in innovative and creative ways
- Develop performance metrics to determine training success and employ adaptive management approaches
- Use cost effective web-based video training in lieu of, or in combination with, traditional training
- Develop surveys from CDOT internal and external customers to improve performance
- Obtain continuity, consistency, and uniformity on all MS4 compliance practices across the state
- Improve MS4 management and environmental compliance state wide

The influence of water quality training extends beyond CDOT headquarters to CDOT regions, consultants and contractors. This program reaches all CDOT regions via personalized, traditional classroom-style training delivery, archived web-based training sessions, and interactive video-based training or live webinars. While some training courses are suitable for consultants and local government agencies, most water quality

training events are directed to the CDOT regional staff with emphasis on technical and compliance requirements outlined by CDOT's MS4 Permit, General Stormwater Permit, and the EPA Audit. The Stormwater Environmental Management System (SWEMS) being developed will provide greater personalization and will identify areas for targeted training.

Water Quality Trainings to Address EPA Comments

Training curriculum table in the attached Water Quality Training Program Description Document (Attachment 5A) identifies the existing and new MS4 Training Programs to address improved MS4 compliance and management. Some of these programs, such as the Transportation Erosion Control Supervisor (TECS) Certification, the Permanent Water Quality Maintenance Program classes, and Permanent Water Quality Draining design Review already have, or will have, certification programs. This table identifies how each identified training program addresses a specific EPA Finding and Corrective Action, and approximate schedule when that training program will be implemented and delivered to its target audience.

Water Quality Trainings Added As Safeguards

Some of these trainings are added to the curriculum as a safeguard to ensure better compliance with the MS4 Permit and its associated programs, but where not required by the EPA Audit. These are identified in Training Attachment 5E, Training Curriculum and Schedules.

Expected Compliance Improvements from Water Quality Training Program

CDOT believes that the new Water Quality Training Program will improve MS4 Permit compliance performance in all CDOT MS4 Programs because it emphasizes regional outreach and education. The CDOT Stormwater Environmental Management System elements will be integrated into the trainings that include technical peer reviews, performance measure monitoring, annual training evaluations and annual management reporting.

Attachments included:

- Attachment 5A – Water Quality Training Program Description Document (PDD),that includes the WQ Training Curriculum, the training Standard Operating Procedures, and the method for course development (addresses all identified EPA Audit findings in this training portion of this submittal)
- Training Attachment 5B – Risk Tool (addresses 3PM)
- Training Attachment 5C – CDOT HQ Water Quality Training Survey and Responses (addresses 2PM, 3PM)

COLORADO
Department of Transportation
Division of Transportation Development

Training Attachment 5A
Water Quality Training Program Description Document (PDD)

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1.1 WATER QUALITY TRAINING PROGRAM DESCRIPTION DOCUMENT OVERVIEW

The Colorado Department of Transportation (CDOT) is authorized by the Colorado Department of Public Health and Environment (CDPHE) to discharge stormwater from its municipal separate storm sewer system (MS4) under the Colorado Discharge Permit System (CDPS). The official MS4 permit (CDPS Permit No. COS000005) requires CDOT to implement seven program areas to prevent pollutants from entering state waters. The seven MS4 program areas are Wet-Weather Monitoring, Construction Sites, Permanent Water Quality Management, Illicit Discharges, Industrial Facilities, Public Education and Outreach, and Pollution Prevention and Good Housekeeping. The MS4 permit further requires CDOT to develop a Program Description Document (PDD) for each of the MS4 program areas, which provides specific programmatic parameters and details how CDOT administers and implements the program (1).

CDOT's Hydrologic Resource and Ecological Design (HRED) Section has decided to also require selected non-MS4 programs to develop PDDs, in addition to the MS4 program area PDDs required by the MS4 permit. The Water Quality Training Program is not directly identified in the CDOT MS4 permit as an MS4 program; however, the MS4 permit, and the April 2015 US Environmental Protection Agency (EPA) audit findings, set forth training requirements and expectations for documenting CDOT staff training. This Water Quality Training Program Description Document (PDD) is based on CDOT's final MS4 PDD Control Document, which was developed to ensure compliance with MS4 PDD requirements across the MS4-specific programs.

This Training PDD will consist of a narrative description of how each MS4 program area implements training to meet MS4 permit requirements and program elements as will be tracked in the CDOT Stormwater Environmental Management System (SWEMS) program (2). The document will include a PDD index, which is a list of citations (including revision history), locations, and staff who are responsible for CDOT training documents that are critical to the MS4 program area.

Consistent with the SWEMS approach, this PDD will be updated periodically to reflect current conditions, new regulations, and adaptive management issues. This document contains many of the same elements contained in an SWEMS, such as recordkeeping, training, responsibility, quality control, and tracking.

1.2 MS4 PROGRAM AREA

The Water Quality Training Program will address water quality and ecological design training for all CDOT MS4 Phase I and II permit areas and non-MS4 areas. Water quality training will focus on CDOT Regional Water Pollution Control Managers (RWPCM), water quality specialists, and environmental managers, consultants, contractors, and CDOT design and construction engineers. Specific training may also focus on hydraulic engineers, maintenance representatives, and CDOT management.

1.3 UPDATES TO THIS GUIDANCE AND ADDITIONAL RESOURCES

The Training PDD is a dynamic document and will be updated as MS4 program requirements change over time because of adaptive management and new regulations and specifications. HRED training modules must be reviewed and reevaluated on a periodic basis as part of the Plan-Do-Check-Act aspects of the CDOT SWEMS. Each training module will be given a unique tracking number so that changes can be documented over time.

2.1 WATER QUALITY TRAINING PROGRAM OVERVIEW

2.2 PROGRAM INTRODUCTION

The success of the Water Quality Training Program is enhanced by effective CDOT employee, contractor, and consultant training and knowledge. Education and outreach is key to environmental compliance at numerous levels within CDOT that affect water quality and right-of-way ecology.

CDOT's HQ Hydrologic Resources and Ecological Design (HRED) Section is comprised of two technical units: the Hydrologic Resources (HR) Unit and the Ecological Design (ED) Unit. The HR Unit is mainly responsible for developing programs to achieve compliance with the CDOT MS4 permit, CDOT specifications, and water quality permitting. The HR Unit is responsible for the following MS4 programs:

- Wet-Weather Monitoring
- Construction Sites
- Permanent Water Quality Management
- Illicit Discharge Elimination
- Industrial Facilities
- Public Education and Outreach
- Pollution Prevention and Good Housekeeping.

The ED Unit is responsible for landscape architecture within the CDOT right-of-way and other CDOT-owned properties. The unit is composed of landscape architects and specialists who develop programmatic guidance, protocols, and designs for regional application. The areas of focus for the ED Unit include, but are not limited to, the following:

- Revegetation
- Landscape design
- Stormwater Management Plans
- Best Management Practices (BMPs)
- Visual aesthetics
- Specification development.

Training has been used successfully by the HRED Section in the past several years, but has not been documented and managed as an overall program.

The Water Quality Training Program will focus on conceptualizing, developing, managing, and implementing training elements that are established by the CDOT MS4 program, EPA Audit Corrective Actions, and existing water quality guidelines.

2.1.1 Water Quality Training Program History

The first water quality program and subsequent training sessions were created by the Environmental Program Branch (EPB) before the HRED Section was established. This program was primarily focused on stormwater management and water quality protection. This first training session was initiated around the time when the EPA was conceptualizing and establishing the MS4 program at a national level in 1992. The first stormwater quality program addressed the control of sediment by using BMPs. An erosion- control supervisor certification program was established by CDOT and administered and delivered by an outside consulting firm.

The 2005 Notice of Violation, and the subsequent 2008 CDPHE enforcement action and resulting consent decree, put training at the forefront toward improving erosion control at construction sites. Initially, only project and design engineers were required by the CDOT Chief Engineer to take erosion-control-based trainings to obtain a CDOT Erosion-Control Supervisor credential. Eventually, environmental and maintenance professionals (CDOT and contractors), and other CDOT employees, were also required to take these trainings.

Eventually, EPB expanded its internal water quality management responsibilities within the MS4 areas and created the HRED Section. The HRED Section hired water quality professionals to oversee the management, and execution, of MS4 programs. As the HRED training matured, more training sessions or modules were developed to improve MS4 permit compliance. These trainings went beyond erosion control and started to address other water quality and ecological aspects, such as the following:

- BMP selection
- Stormwater Management Plan development
- Maintenance academy training for new hires
- Revegetation (web-based video training).

2.1.2 Water Quality Training Program Goals and Objectives

In an effort to make CDOT the “best Department of Transportation in the Country for All Customers” and “the best DOT in the Country” (3), the HRED Section is implementing a vision for the training program that is consistent with CDOT’s vision. HRED Section has an existing mission statement that will serve as the environmental policy for the Stormwater EMS and the goal for CDOT. The statement includes the following commitments:

- Ensure that the quality of stormwater runoff is protected while Colorado’s roadways are constructed, operated, and maintained;
- Promote innovative best management practices;

- Provide effective water quality education to CDOT staff; and
- Facilitate cooperation between CDOT, watershed groups, other Water Quality Program Managers, businesses, and the public.

The objectives of the Water Quality Training Program include the following:

- Empower MS4 Managers and stormwater mitigation/landscape designers to develop modules in innovative and creative ways
- Develop performance metrics to determine training success and employ adaptive management approaches
- Use web-based video training in lieu of or in combination with traditional training
- Develop surveys from CDOT internal and external customers to improve performance
- Extend the CDOT outreach and education audience through effective marketing
- Obtain continuity, consistency, and uniformity on all environmental compliance practices across the state.

2.2 WATER QUALITY TRAINING PROGRAM COVERAGE

The influence of water quality training extends beyond CDOT headquarters to local consultants and contractors. This program reaches all CDOT regions via personalized, traditional classroom-style training delivery, archived web-based training sessions, and interactive video-based training or live webinars. While some training courses are suitable for private consultants and local government agencies, most training events are directed to the CDOT regions with emphasis on technical and compliance requirements established by CDOT to address statewide environmental requirements and CDOT specification and policies.

2.3 APPLICABLE TRAINING PROJECTS

Each MS4 program and the ED Unit will have their own unique training programs to improve existing compliance on a regional basis to meet statewide goals and to educate employees and contractors/consultants on new regulations, policies, and specifications. Appendix A contains a Water Quality Training Curriculum and Schedule that will be used by the HRED Training Leader as a tool to manage trainings. It includes existing and future water quality training courses. This matrix establishes a working baseline for all future trainings and identifies future training sessions that will be needed to address MS4 permit requirements, Audit Corrective Actions, and program efficiencies. The HRED Section Training Leader is responsible for updating and maintaining the matrices.

The majority of the water quality training is related to MS4 program regulatory requirements. The dominant training programs are associated with the Construction and Permanent Water Quality (PWQ) Programs of CDOT's MS4 Permit and General Permit.

The trainings that cover landscaping design requirements, as lead by the ED Unit, are not dependent upon regulatory requirements but whose foundation is based upon CDOT guidance, specifications, and policy. ED Unit training could have an MS4 compliance aspect to the extent landscaping and vegetation aspects of PWQ control measures (CMs) are covered.

2.4 TRAINING PLANNING AND APPROVAL

The planning of training requirements is coordinated between the Training Program Manager, the HR and ED Unit Managers, and the training initiator or "Training Owner," who may be an MS4 program leader or an ED landscape specialist. The Training Program Manager has created both documentation and approval protocol for trainings conceptualizing, development, and implementation.

An HRED Course Development Document (Appendix B shows an example course in this document) was created to document conceptualization and future training session development. The form is broken into two parts: existing training programs and future training programs. Each training session is given a unique document control number for documentation tracking. This Course Development Document is an important reference for the Training Program Manager when approving and funding new training classes.

The Water Quality Training Program process was developed to integrate quality assurance and quality control (QA/QC) into the Training Development Process (Appendix C). The process is composed of the following four stages:

1. Conceptual and development (Plan)
2. Marketing
3. Administration
4. Implementation (Do-Check-Act).

Formal approval by the Training Program Manager will be required at key points within the process to ensure (1) training consistency, (2) non-overlap with other training programs, (3) quality, (4) correct focus audience, (5) tracking and documentation, and (6) available funding.

2.5 WATER QUALITY TRAINING PROGRAM ORGANIZATIONAL STRUCTURE

Consistent with the Stormwater EMS process, a Training Program Manager and organization was established. Defining an organization structure will promote efficiency, responsibility, and accountability. Training development and success are the responsibilities of all HRED employees and are a topic for performance reviews. The following outlines the Water Quality Training Program organization:

- Training Program Manager (Tom Boyce): ensures (1) training consistency, (2) non-overlap with other training programs, (3) quality, (4) the correct audience is being reached, and (5) tracking and documentation. The Training Program Manager also ensures and manages QA/QC actions
- HR Unit Lead (Rick Willard): works with MS4 program leaders to identify training needs and develop conceptual approach with Training Owner; creates CDOT Course Development Document for the Training Program Manager to review and approve
- ED Unit Lead (Mike Banovich): works with ED staff to identify training needs and develop conceptual approaches; creates the CDOT Course Development Document for the Training Program Manager to review and approve

- Training support (Brian Hayes): provides programmatic guidance
- MS4 managers and Landscape Architects/Specialists: training session "owners" identify, develop and implement training sessions to improve their programs and help ensure regulatory and specification compliance
- Regional Planning and Environmental Managers/Water Pollution Control Managers/ Environmental Managers/Engineers/Maintenance Management: coordinate regional trainings to ensure that applicable CDOT staff receive the same trainings at the same frequencies to ensure that CDOT regional staff are moving forward in professional competency, expertise, and regulatory and specification compliance as one statewide agency rather than five regional entities.

2.6 REGULATORY-BASED TRAINING

Section 2.6 applies specifically to the Construction Sites, PWQ, and Illicit Discharge Elimination Programs under the HR Unit. This Water Quality Training PDD identifies the regulatory-based training mechanism(s) that are needed to meet the regulatory-based MS4 permit and EPA Audit Corrective Actions requirements.

The following text is taken directly from the CDOT MS4 permit (1) and the EPA Audit Findings (4):

2.6.1 CDOT MS4 Permit

Construction

The permittee must provide information to operators of covered construction activities as necessary to ensure that each operator is aware of the permittee's requirements as necessary to ensure that each operator is aware of the permittee's requirements, including controlling pollutants such as trash.

A. The permittee shall provide information to operators of covered construction activities as necessary to ensure that each operator is aware of the permittee's requirements.

B. The training must also include information on trash associated with covered construction activities and its effects on water quality.

C. The permittee shall require training for operators of covered construction activities that, at a minimum, includes principles, implementation, and updating of control measures and a SWMP; and installation and maintenance of control measures with a certified field component.

D. The permittee shall require all existing and newly hired permittee personnel who are involved in project design, oversight and/or maintenance related to stormwater drainage and quality to attend a stormwater training course, or series of courses, as appropriate, that can include, but is not limited to the following:

1. Control measure design and overall stormwater management into a project's construction design and
planning phase.
2. Implementation of control measures during different phases of construction and the maintenance of a system/series of pollution controls throughout the life of a project and as a

project evolves through those different phases.

3. Specific guidance on appropriate, functional, and effective control measures to implement when working in and adjacent to state waters and how those control measures can and should be incorporated into the design of a project.
4. The proper use of, and necessary modifications to, permanent flood control structures that are used as temporary construction control measures.
5. Detailed instruction on final stabilization and the implementation and maintenance of control measures at projects once construction operations have ceased, including a

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Name and title of each individual trained, date of training, the type of training, and a list of

topics covered. Training: A list of citation(s) and location(s) of the training program and

supporting documents.

Illicit Discharge

The permittee must train applicable personnel to recognize and appropriately respond to illicit discharges observed during typical duties. The permittee must identify those who will be likely to make such observations and provide training to those individuals. The training must address how suspected illicit discharges will be reported/identified, general information for recognizing and responding to illicit discharges observed during typical duties, information on the sources and types of operations or behaviors that can result in an illicit discharge, and information on the location of priority areas.

Training: Name and title of each individual trained, date of training, the type of training, and a list of topics covered.

Training: A list of citation(s) and location(s) of the training program and supporting documents.

Industrial Facilities

iii. Personnel Training: The permittee shall provide training to applicable permittee personnel to inform them of the permit requirements under this program area.

Training: Name and title of each individual trained, date of training, the type of training, and a list of topics covered.

Training: A list of citation(s) and location(s) of the training program and supporting documents.

Pollution Prevention and Good Housekeeping Program

The permittee shall implement the following categories of control measures as necessary to prevent or reduce the pollutant sources present:

Personnel training

Train applicable permittee personnel to implement the Pollution Prevention/Good Housekeeping Program, including training for personnel that will conduct inspections in accordance with Part I.E.6.a.ii(C). The

permittee must identify those who will be likely to inspect the control measures and provide training to those individuals. The program must inform personnel responsible for operations with the potential to result in an illicit discharge about the permittee's prohibitions against, and potential impacts associated with, illicit discharges from permittee operations. The training must also include information on trash and its effects on water quality.

Training: Name and title of each individual trained, date of training, the type of training, and a list of topics covered.

Training: A list of citation(s) and location(s) of the training program and supporting documents.

2.6.2 EPA Audit Comments

The following are the EPA Audit Comments that either mentioned training in the finding or the corrective/recommended actions, or implied training as a way to "ensure" compliance.

2PM Findings: – CDOT Headquarters and Regional staff are not consistently aware of the requirements in the

Stormwater Management Programs, and the Stormwater Management Programs are not being consistently implemented.

2PM Corrective Actions:

- Ensure that CDOT HQ and regional staff are trained on the requirements of the MS4 permit and associated CDOT programs. Ensure staff implement these programs and provide EPA and CDPHE a summary of how CDOT plans to accomplish this.

3PM Findings: – CDOT has not ensured training for staff on requirements of the MS4 permit and associated CDOT programs as necessary to achieve compliance with the conditions of the permit.

3PM Corrective Actions:

- Ensure CDOT personnel receive adequate training and information to implement the MS4 program.
- Submit to the EPA and CDPHE a roster of who has received MS4 program training, and describe how CDOT intends to ensure MS4 employees receive training.

3PM Recommended Actions:

- It is recommended safety training be provided as part of any MS4 program training, if it is not already.

4PM Findings:

At the time of the inspection, CDOT staff did not appear to have adequate training to identify the permit boundaries to ensure that implementation of stormwater controls necessary to achieve compliance with the conditions of the Permit.

4PM Corrective Actions:

- Review the Permit boundaries in which the MS4 requirements apply, including census designated urbanized areas and the jurisdictional boundaries of all Phase I and Phase II MS4s. Provide adequate training to ensure the MS4 program is implemented within the all Permit boundaries.

1ID Findings:

CDOT does not have adequate legal authority for illicit discharges, as required to have been submitted with CDOT's permit application

1ID Corrective Actions:

- Submit to EPA and CDPHE a summary of why CDOT had adequate legal authority and individually address A-F in the permit application requirements above, or indicate how and when CDOT will obtain such adequate legal authority.

1CS Findings:

The [208.09] Standard Specifications do not require stop work orders to be issued for discharges to state waters or other egregious non-compliance instances [because the word "may" instead of "will" is included in the language, and it does not require a stop-work order for discharges to state waters or other egregious non-compliance instances].

1CS Corrective Actions:

- [Although] CDOT's new MS4 Permit, issued in 2015, does not require a stop work order in specific instances, [EPA implied they would still like to see this stop-work order requirement implemented through specification changes.]

2CS Findings:

CDOT failed to ensure compliance with the Construction General Permit, enforce according to the Standard Specifications [aka Green Book], and implement sanctions for chronic failures at design-bid (sic) projects. [assuming Design-Build projects].

2CS Corrective Actions:

- CDOT's new MS4 Permit issued in 2015 no longer incorporates the Construction General permit by reference. Update and implement the Construction Sites Program to ensure CDOT required contractors implement the requirements listed in CDOT's new permit.

2CS Recommended Actions:

- CDOT develop an alternative enforcement structure that provides additional pathways to enforcement escalation including oversight of Project Engineer (PE) decisions by the Water Quality Control Manager and does not rely only on the PE. CDOT should evaluate its design-build process to determine why these projects tend to have more problems, and address the root cause(s).

3CS Findings:

CDOT failed to follow the Green Book [aka Standard Specifications] procedure for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions that went beyond 48 hours.

3CS Corrective Actions:

Follow the Green Book [208.09 Spec] procedure for construction sites by issuing and collecting liquidated damages for corrective actions that go beyond 48 hours. Indicate

in a response how CDOT plans to ensure this is achieved.

4CS Findings:

CDOT has no formal mechanism to address chronic noncompliance by contractors as long as corrective actions occur within 48 hours.

4CS Corrective Actions:

- Update the Green Book [208.09 spec] to include a process to address chronic noncompliance by contractors even if corrective actions are always completed within 48 hours. Ensure there is an infrastructure in place to track chronic noncompliance by contractors. Submit this update to EPA.

5CS Findings:

Contractors' failures to meet Construction General Permit and Green Book requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.

5CS Corrective Actions:

- Ensure contractors, as well as CDOT, are in compliance with the Permit and the Standard Specifications. This includes ensuring the CDOT and TECS inspectors are trained on the requirements and enforce those requirements. Indicate in a response how CDOT intends to ensure compliance.

1ND Findings:

The inventory of CDOT Permanent Water Quality Facilities (PWQFs) was incomplete and inaccurate.

1ND Corrective Actions:

- CDOT must maintain an accurate inventory of PWQFs in order to ensure long-term maintenance of them. Indicate in a response 1) how CDOT will update its inventory, 2) describe the platform for the inventory (e.g., OTIS, etc.) and 3) indicate how that inventory will be used to ensure long-term maintenance.

2ND Findings:

CDOT does not have a complete list of PWQFs with intergovernmental agreements (IGAs) and is not ensuring long-term maintenance or proper operation and maintenance of PWQFs with IGAs.

2ND Corrective Actions:

- Develop a procedure to ensure long-term maintenance is performed on CDOT's PWQFs and that they are operating properly, including those that are covered under IGAs or other similar agreements with external entities. Provide a procedure to the EPA and CDPHE describing CDOT PWQFs maintained by Local Municipalities:
  1) How CDOT will keep this IGA-covered inventory accurate,
  2) How CDOT will transmit info from routine inspections of PWQFs to the local municipality, and
  3) How CDOT will verify the maintenance needs identified are accomplished.

3ND Findings:

CDOT was not ensuring long-term maintenance of PWQFs.

3ND Corrective Actions:

- Develop a procedure to ensure that maintenance is performed on CDOT's PWQFs and that they are operating properly, including those covered under an IGA or other similar agreements with external entities. Provide a procedure to the EPA and CDPHE describing how CDOT will ensure long-term maintenance will be accomplished as well as a timeframe for implementing and completing all currently needed maintenance.

1PP Findings:
CDOT maintenance facilities were not fully implementing facility runoff control plans (FRCPs), updating or amending FRCPs, and FRCPs did not address all required items.

1PP Corrective Actions:

- Implement the FRCP program. Evaluate of each of the maintenance facilities listed in the report and provide EPA and CDPHE a numbered summary of actions performed to address each of the 18 corresponding numbered failures of CDOT to fully implement FRCPS, update or amend the FRCPs, and address all required items in the RECPs.

2PP Findings:
The 18500 East Colfax Avenue maintenance facility did not have the most recent updated FRCP on-site.

2PP Corrective Actions:

- Ensure facilities have the most recent updated FRCP on-site, and ensure the facilities receive updated copies. Provide the EPA and CDPHE with a response indicating how CDOT will ensure this occurs in the future.

2.6.3 CDOT Responses to EPA Audit

2PM Corrective Actions: Ensure that CDOT HQ and regional staff are trained on the requirements of the MS4 permit and associated CDOT programs. Ensure staff implement these programs and provide EPA and CDPHE a summary of how CDOT plans to accomplish this.

CDOT Response:

CDOT agrees with this recommendation and is in the process of developing a self-audit and corrective action program and will be part of our Environmental Management System. CDOT is also in the process of developing an MS4 Program overview training to make sure CDOT staff understands this program.

3PM Corrective/Recommended Actions:

- Ensure CDOT personnel receive adequate training and information to implement the MS4 program.
- Submit to the EPA and CDPHE a roster of who has received MS4 program training, and describe how CDOT intends to ensure MS4 employees receive training.
- It is recommended safety training be provided as part of any MS4 program training, if it is not already.

CDOT Response:

CDOT agrees with this corrective action and will ensure staff receive training. CDOT will provide a training log of those attending the training to EPA and CDPHE. In order to ensure CDOT MS4 employees receive adequate training, CDOT will evaluate the existing training programs to identify where it does or does not address the MS4 Permit (issued 7/28/2015) program requirements. Existing trainings will be modified to address any gaps identified and new training will be developed for any gaps that cannot be addressed by modifying any existing trainings. CDOT already provides safety training as part of the MS4 Program training. A training under development includes the Stormwater Management Plan Preparer training, as well as the MS4 Program overview training.

4PM Corrective Actions:

- Review the Permit boundaries in which the MS4 requirements apply, including census designated urbanized areas and the jurisdictional boundaries of all Phase I and Phase II MS4s Provide adequate training to ensure the MS4 program is implemented within the all Permit boundaries.
- This includes ensuring CDOT and TCES inspectors are trained on the requirements and enforce

those requirements. Indicate in a response how CDOT intends to ensure compliance.

CDOT Response:

CDOT agrees with this corrective action and CDOT is in the process of updating specification 208 of the Standard Specifications and will also provide training. In addition, the TECS certification is being reviewed and modified as necessary, and a training is being developed for the MS4 Program overview. An update on CDOT's progress will be provided to EPA in conjunction with the resource assessment (1PM).

1ID Corrective Actions: Submit to EPA and CDPHE a summary of why CDOT had adequate legal authority and individually address A-F in the permit application requirements above, or indicate how and when CDOT will obtain such adequate legal authority.

CDOT Response:

CDOT submitted the rationale about why they have adequate legal authority but for this training PDD, CDOT is also adding safeguards by modifying the Illicit Discharge training to add this explanation.

1CS Corrective Actions: [Although] CDOT's new MS4 Permit, issued in 2015, does not require a stop work order in specific instances, [EPA implied they would still like to see this stop-work order requirement implemented through specification changes.]

CDOT Response:

CDOT has issued the updated Standard Specifications for Road and Bridge Construction to change "may" to "will" as discussed in this finding. These specification changes are reinforced by a Chief Engineer Memorandum, conveying the importance of their implementation as our MS4 Regulatory Authority and that Project Engineers interpret existing contract language of "may" as "will" and shall issue liquated damages and/or stop work orders on all active construction projects that failed to correct findings within 48 hours after being identified or for discharges into state waters. Additional safeguards being added will include training through better communications including at a Feb/March 2017 Transportation Conference, as well as training through classes including the Transportation Erosion Control Supervisor Certification and the Water Quality and Erosion Control Specifications Training.

2CS Corrective/Recommended Actions: CDOT's new MS4 Permit issued in 2015 no longer incorporates the Construction General permit by reference. Update and implement the Construction Sites Program to ensure CDOT required contractors implement the requirements listed in CDOT's new permit. CDOT develop an alternative enforcement structure that provides additional pathways to enforcement escalation including oversight of Project Engineer (PE) decisions by the Water Quality Control Manager and does not rely only on the PE. CDOT should evaluate its design-build process to determine why these projects tend to have more problems, and address the root cause(s).

CDOT Response:

As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction. CDOT developed two Design-Build training modules for environmental compliance to train internal engineers regarding environmental risk. CDOT also participated in a national peer exchange led by FHWA regarding lessons learned for Design-Build projects during the week of September 19, 2016, and will evaluate relevant changes in guidance. However, CDOT will continue to work with improving the Design-Build process for stormwater compliance. The MS4 Construction Program is being re-developed to include MS4 Permit requirements as described in this EPA Audit finding. The result will be an MS4 Construction Compliance Program Manual that will include Standard Operating Procedures. As additional safeguards, CDOT is also developing training to address the new Construction program and revised standard operating procedures as currently under development for the new MS4 Permit Compliance Schedule.

3CS Corrective Actions: Follow the Green Book [208.09 Spec] procedure for construction sites by issuing and collecting liquidated damages for corrective actions that go beyond 48 hours. Indicate in

a response how CDOT plans to ensure this is achieved.

CDOT Response:

As detailed in a previous submittal, CDOT issued the updated Standard Specifications for Road and Bridge Construction. Additional safeguards being added include training: See response for 1CS - Communication and training of these new specification changes, and response for 2CS Construction Program Description Document training.

4CS Corrective Actions: Update the Green Book [208.09 spec] to include a process to address chronic noncompliance by contractors even if corrective actions are always completed within 48 hours. Ensure there is an infrastructure in place to track chronic noncompliance by contractors. Submit this update to EPA.

CDOT Response:

CDOT has issued the updated Standard Specifications for Road and Bridge Construction. (See 1CS for description). The Construction Program revision is in process and will address chronic noncompliance by contractors and associated frequency of MS4 Compliance Inspection. Chronic non-compliance is being discussed within our task force on how to better address this issue and whether a spec change or other directive is the most effective approach. Additional safeguards include training development as described in 1CS and 2CS.

5CS Corrective Actions:

- Ensure contractors, as well as CDOT, are in compliance with the Permit and the Standard Specifications. This includes ensuring the CDOT and TECS inspectors are trained on the requirements and enforce those requirements. Indicate in a response how CDOT intends to ensure compliance.

CDOT Response:

CDOT agrees with this corrective action and CDOT has updated specification 208 of the Standard Specifications and will also provide training. In addition, the TECS certification is being reviewed and modified as necessary. Other trainings being developed include the water quality and erosion control specification training, the MS4 Construction program and SOP training, and the Stormwater Management Plan Preparers class on SWMP design. An update on CDOT's progress will be provided to EPA in conjunction with the resource assessment (1PM).

1ND Corrective Actions:

- CDOT must maintain an accurate inventory of PWQFs in order to ensure long-term maintenance of them. Indicate in a response 1) how CDOT will update its inventory, 2) describe the platform for the inventory (e.g., OTIS, etc.) and 3) indicate how that inventory will be used to ensure long-term maintenance.

CDOT Response:

CDOT indicated how the PWQ process will be conducted and the platform that will be used for the PWQF inventory. The PWQF existing inventory is almost complete. PWQF Future Inventory Identification Process Has Been Developed - Regions and HQ developed and implemented a procedure for adding new PWQFs to SAP and including Area Treated Geodatabase. As an additional safeguard, CDOT is also developing a PWQ Maintenance Training Certification class.

2ND Corrective Actions: Develop a procedure to ensure long-term maintenance is performed on CDOT's PWQFs and that they are operating properly, including those that are covered under IGAs or other similar agreements with external entities. Provide a procedure to the EPA and CDPHE describing CDOT PWQFs maintained by Local Municipalities:

1) How CDOT will keep this IGA-covered inventory accurate,
2) How CDOT will transmit info from routine inspections of PWQFs to the local municipality, and
3) How CDOT will verify the maintenance needs identified are accomplished.

CDOT Response:

The PWQ Procedure Assessment report is under development for both those CDOT PWQFs maintained by Local Municipalities and those maintained by CDOT. Additional safeguards being added include trainings as described under 1ND.

3ND Corrective Actions:

- Develop a procedure to ensure that maintenance is performed on CDOT's PWQFs and that they are operating properly, including those covered under an IGA or other similar agreements with external entities. Provide a procedure to the EPA and CDPHE describing how CDOT will ensure long-term maintenance will be accomplished as well as a timeframe for implementing and completing all currently needed maintenance.

CDOT Response:

CDOT agrees with the corrective action. The assessment report, already under development, will address the procedures to ensure maintenance is performed and that PWQFS are operating correctly as outlined in EPA Finding 3ND. This assessment will evaluate existing procedures to identify the underlying problem and determine an effective solution as described in CDOT's response to 2ND above. Additionally, the assessment will evaluate the inventory procedures described in 1ND to determine how those will work with the other revised procedures to ensure the components of the overall process work together. As additional safeguards, PWQ Maintenance training Certification, and a PWQ Drainage Design Certification trainings are being developed.

1PP Corrective Actions:

- Implement the FRCP program. Evaluate of each of the maintenance facilities listed in the report and provide EPA and CDPHE a numbered summary of actions performed to address each of the 18 corresponding numbered failures of CDOT to fully implement FRCPS, update or amend the FRCPs, and address all required items in the RECPs.

CDOT Response:

CDOT's Facility Runoff Control Program (FRCP) was being properly implemented and was in compliance with the MS4 permit. During EPA field inspections of the maintenance facilities listed in this audit report, there were 18 findings. A finding is not a violation of our MS4 permit but rather one of the first steps in a properly functioning FRCP. These findings were addressed during the inspection or immediately upon notification and each of the 18 numbered findings response summaries were provided in this response letter. As additional safeguards, FRCP Training has been revised and is being implemented.

2PP Corrective Actions:

- Ensure facilities have the most recent updated FRCP on-site, and ensure the facilities receive updated copies. Provide the EPA and CDPHE with a response indicating how CDOT will ensure this occurs in the future.

CDOT Response:

CDOT disagrees with this corrective action. The facility binder dated June 2014 was on site and was supplied to EPA later during the inspection. The FRCPs EPA is referring to are the old FRCPs which are also stored on site. During the Annual FRCP audit (May 27th 2015), all documents were on site and up-to-date. This binder is now located at the entrance to the main facility building hallway. This allows access to all facility personnel. All site personnel that are involved and/or responsible for different areas of the FRCP will be trained. As additional safeguards, FRCP Training has been revised and is being implemented.

2.7 TRAINING IMPLEMENTATION AND PROCEDURES

Section 2.4 of this PDD (Training Planning and Approval) identified two training processes for water quality training: the Water Quality Course Development Document and the Water Quality Training Program process. The implementation and procedures of these documents have been developed under the Training Program Standard Operating Procedures (Appendix D). This reference document

will be available for all HRED employees who will be developing training sessions for their individual programs.

2.8 TRAINING AND CERTIFICATIONS

Appendix A provides a list of all of the existing and future HRED training sessions. Only one HRED program is currently associated with a certification — the Transportation Erosion-Control Supervisor (TECS) Certification Training Program. This certification is required by CDOT specifications that state that all CDOT construction projects must have a TECS on site during construction activities.

The HRED's PWQ Program andEcological Design Unit are also contemplating certifications. The PWQ Program is considering a certification for PWQ CM maintenance, inspections, and design and plan review. The ED Unit foresees the need for a Stormwater Management Plan Development certification. None of these future certifications are required by CDOT specifications and regulations or the MS4 permit.

HRED Certification requires the following program elements to effectively administer the training program:

- Administrative support
- Enrollment and scheduling
- Certificates
- Certification renewal
- Testing and passing requirements
- Notification for renewals
- Cost for certification.

When developing certification programs, several items should be considered, such as additional cost, infrastructure needs, level of competence, refresher classes, and continuing education class credits. The type and level of education, understanding, and competence need to fit the overall objectives of the training program.

2.9 WATER QUALITY TRAINING QUALITY ASSURANCE/QUALITY CONTROL

The Water Quality Training Program compliance and quality assurance is a HR Unit function and is the responsibility of the HRED Training Program Manager. This section describes MS4 program QA/QC actions performed by HR Unit staff to ensure that training activities developed by CDOT comply with the MS4 permit and CDOT policy. The performance metrics associated with the Water Quality Training Program's QA/QC depend on individual training program requirements. QA/QC elements will include, but are not limited to, the following:

- Qualifications of trainer: the trainer must be qualified to perform the actual training and must have a high level of experience in the field. The trainer must be approved by the HRED Training Program Manager.
- Training reevaluation: all training sessions must be reviewed and reevaluated on an annual

basis to account for new specifications, regulations, or other programmatic issues. All reference documents will be reviewed for changes. All revisions must be approved by the HRED Training Program Manager or his designee.

- Performance measures: identified performance measures must be obtained and evaluated by the Training Owner; the HRED Training Leader will review performance measures and success at least annually.
- Teach evaluation results: the results will be routinely reviewed by the Training Owner and trainers.
- Student testing and passing: the percentage of students passing will be evaluated as per the estimated goal. Teaching and testing refinement may be made, and student testing will be based on a normalize bell curve in which some students will fail.
- Documentation: all training sessions must be given a unique document control number; all revisions will require a new document control number that is entered into the training database.
- Training session quality: the quality must be formally approved by the HRED Training Program Manager and the HR and ED Unit Managers during the training development process.
- Plan-Do-Check-Act: the training process will use a Plan-Do-Check-Act approach in which the training sessions and the overall HRED Training Program is reviewed and modified as needed.
- Review: training program processes will be reviewed to ensure action and execution on a routine basis via internal or external audits.

QA/QC elements are located in the HRED Training Standard Operating Procedure (Appendix D).

2.10 TRACKING

The Water Quality Training Program documents procedures and mechanisms to track training activities used to maintain compliance with the MS4 permit and other water quality-related programs such as dewatering- permitting revegetation, BMP selection, and ESCAN training. A water quality training database has been established and managed by the HRED administrative assistant to track, at a minimum, the following elements:

- Training session control number and training material files
- Approved and completed HRED Section Course Development Documents
- Attendance sheets
- Student test scores tracked as required
- Certifications and recertification notifications.

The training session owner is responsible for ensuring that all tracking information is submitted to the HRED administrative assistant for data input.

2.11 WATER QUALITY TRAINING DOCUMENTS

Water Quality training documentation, such as the actual training modules, student and instructor

manuals, and ancillary attachments, will be stored within the HRED Training Database or program filing system. The following is the main revision process:

- Training revisions will be discussed with the HR or ED Unit Managers.
- Any training revisions must fill out an HRED Section Course Development Document.
- Training revisions will be discussed and formally approved by the HRED Training Program Manager.
- A unique document control number will be given to the revised training session and input into the training database.

2.12 ANNUAL REPORTING

Consistent with the CDOT SWEMS approach, an annual training summary memorandum of the HR and ED training programs will be developed by HR and ED Unit Managers and staff and reviewed by the CDOT HRED Training Program Manager. An annual report will be developed and submitted to the EPB Manager, who will address the level of training success based on established performance metrics and successful compliance with QA/QC items. Training session(s) and program problems will be identified, and corrective actions will be taken. Corrective actions may require additional funding or resources to ensure training quality and meet program goals. If funding is not available, the level of action may be reduced depending on the level of sensitivity and compliance risk.

2.13 HRED TRAINING REFERENCE INDEX

Any important changes to a training session reference document must be made known to the Training Owner so training module modification can readily be made. The Water Quality Training Reference Index (Appendix F) is a complete list of documents, materials, standard operating procedures, design standards, guidance documents, software, and other sources used as a reference for all training sessions and modules. Each indexed resource will include a citation that includes the source/author, date, document location(s), location(s) of supporting information, and CDOT staff who are responsible for the resource.

3.0 REFERENCES

(1) Colorado Department of Public Health and Environment, 2015. *Authorization to Discharge Under the Colorado Discharge Permit System*, Permit Number COS000005, prepared by the Colorado Department of Public Health and Environment, Water Quality Control Division, Denver, CO, October 16.

(2) Colorado Department of Transportation, 2016. "Mission and Vision," www.codot.gov, retrieved April 29, 2016, from https://www.codot.gov/about/mission-and-vision.html

(3) RESPEC and First Environment, 2016. *Environmental Management System Implementation Plan, Colorado Department of Transportation Water Quality Program*, RSI-2590, prepared by RESPEC, Denver, CO, and First Environment, Boonton Township, NJ, for Colorado Department of Transportation, Denver, CO.

(4) Colorado Department of Transportation, MS4 Inspection Report Preliminary Response to EPA Audit (Josh Laipply), December 11, 2015.

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Training Appendix A
Water Quality Training Curriculum and Schedule

Insert Training Curriculum table here

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Training Appendix B - Water Quality Training Program Course Development Document Example

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EXAMPLE

HYDROLOGIC RESOURCE & ECOLOGICAL DESIGN SECTION COURSE DEVELOPMENT DOCUMENT

Specific Course #: *# will be used for document control*

Development Date: _____ Renewal Review Date:

Name of Class: _____

Course Rational: *Explains drivers of why course is needed*
Course Goals: *Explains the performance measures the training will be held to*
Educational Approach: *Explains what type of training methods will be used*
Problem Statement: *Explains what issues the training is designed to remedy*
Desired Result: *Explains what changes are to be expected as a result of the training*
Internal Tracking: *How the training course will be monitored in LMS*
Cost to Develop Class: Internal or External Development? SPR, Water Quality Budget or Other Funding Source?

Target Audience: ☑ Internal / ☑ External (Check All That Apply)

☐ Water Quality / ☑ Maintenance / ☐ Engineering / ☑ Contractor (Prime) / ☐ Hydrology / ☐ Construction

☐ Local Agency / ☐ General Public / ☐ Other (explain): _____

Trainers: ☐ Internal / ☐ External (Specifics): _____

Trainers Qualifications: _____

Required Prerequisites Completed: ☑ Yes / ☐ No (If yes, list course(s) below)

Class Name	Justification
prerequisite	*Why prerequisite is necessary*

Is This Class Required for Another Course: ☐ Yes / ☑ No (If yes, list course(s) below)

Class Name	Justification

Mandatory (for Target Audience): ☑ Yes / ☐ No (If yes, justify below)

Group	Justification
Audience/target	*Why mandatory training is necessary*

Reference Documents: ☐ Reference Documents Attached

Document	File Type
Tools, manuals, etc.	

Cost to Attendee: $ free

Course Purpose: ☐ Training / ☑ Certification / ☐ Continuing Education / ☐ Other _____

Test: ☑ Yes / ☐ No

Certification: ☑ Yes / ☐ No (if Yes, Certification Section must be completed in its entirety before moving forward in development process)

Certification:

Certification Name:
Person and/or Department Requesting Certification Development:
Is the Certification Necessary to Complete Work:
How Long Does the Certification Last:
How do Students Re-Certify:

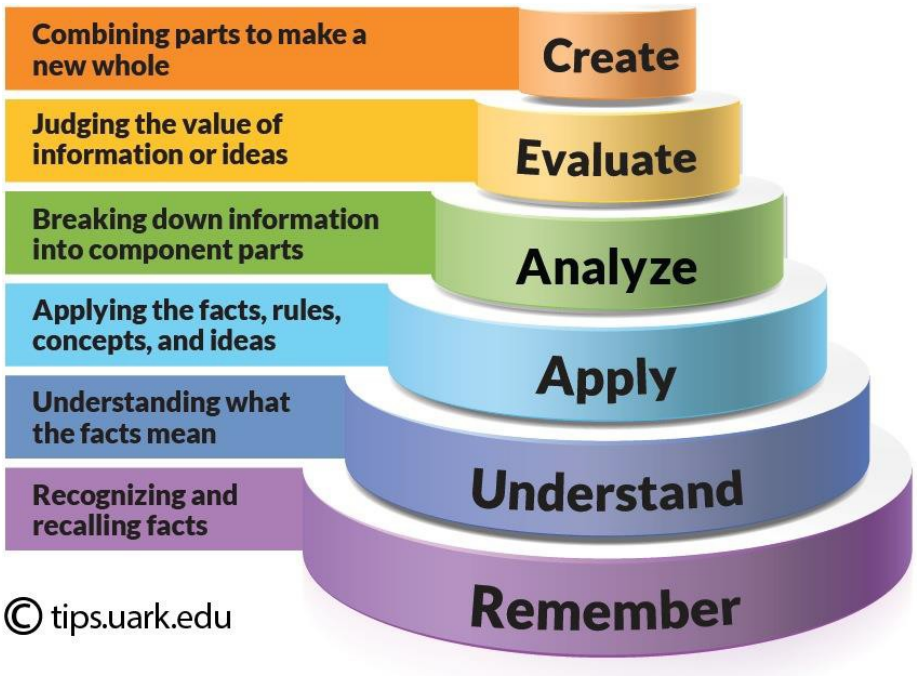
How do Students Maintain Certification:
Certification Revocation Process:

Is the Course Part of a Series of Courses: (list those course and stage of development)
Are Any Aspects of Process Time Bound: (Prerequisites, Other Certifications)

Anticipated Pass/Fail Rate:_____ %
Tracking System: ☐ **Excel** / ☐ **SAP** / ☐ **LMS** / ☐ **Other (explain):**
Certification Exam: ☐ **Yes** / ☐ **No**
Retain Stipulations: ☐ **Yes** / ☐ **No**

Emergency Response Plan Developed: ☐ Yes ☑ No (If yes, attach on separate sheet)

Blooms Taxonomy: (Circle where the course falls on the scale)



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HRED Section Leader Approval: ☑ Yes ☐ No

Signature: Tom Boyce

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Training Appendix C
Water Quality Training Process

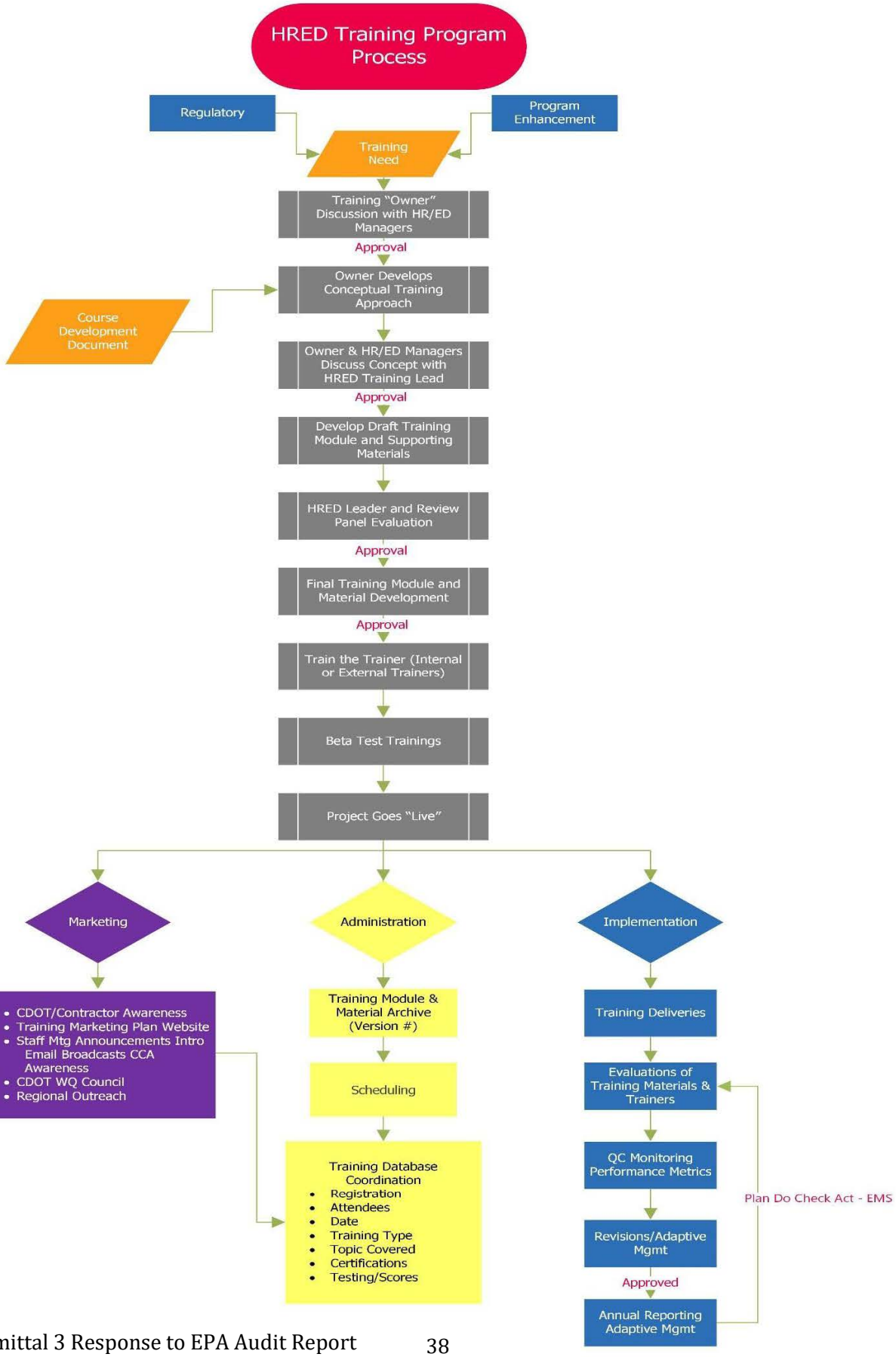

Figure 1. HRED Training Program Flow Chart

Training Conceptualization and Development

The conceptualization of a training session requires close communication between the Training Owner, the appropriate Hydrologic Resource (HR) and/or Ecological Design (ED) Unit Managers, and the HRED Section Training Program Manager. This process will ensure that high quality training sessions are developed that have well defined goals and objectives to address the training driver issue. The process is not meant to be too complex, bureaucratic and cumbersome; however, is meant to create an atmosphere of cooperation, communication, innovation and efficiency that is consistent with the CDOT SWEMS concept. The following describes the training development process:

- Training Owner Discussion with HR/ED Manager- the main driver(s) is discussed between the Training Owner and the appropriate Unit Managers. Training ideas and approaches and potential challenges are identified and discussed. Ideas are flushed out before coordinating with the HRED Section Training Program Manager.

- After the training Owner Develops a Conceptual Training Approach- based upon the discussions with the Unit Managers and the training course information requested in the Water Quality Course Development Document, a conceptual approach will be developed. The conceptual training approach at this point is well thought out within a training outline, draft power point-based handout or other formats.

- Training Owner and Unit Managers Discuss Concept with HRED Section Training Program Manager - the Training Owner and Unit Leader discuss with the HRED Training Program Manager the conceptual training purpose, objectives, the potential development, delivery approach, potential cost/funding and schedule. The HRED Section Training Program Manager will either approve of the training concept for the next stage in development or reject the training approach thus requiring further study and revision. The HRED Section Training Program Manager will also weigh several other acceptance factors as priority, such as available funding and training concept completeness. It should be noted that HRED Section Training Program Manager approval is needed before any resources are spent to develop the proposed draft training session.

- Develop Draft Training Session and Supporting Materials- the actual development of the draft training session or project is performed and/or managed by the Training Owner using a combination of internal and external resources. Subcontracts, financial budgets and detailed schedules are developed at this stage to initiate training development. Training materials may include but are not limited to Power Points, videos, graphics, figures, and student and teacher manuals, ancillary student materials, etc. This material is organized for the upcoming HRED Section Training Program Manager review.

- HRED Section Manger and Review Panel Evaluation- depending upon the size, cost, priority and complexity of the proposed training session, a review panel may

be chosen by the HRED Section Training Program Manager to review and comment upon the draft training materials in concert with the HRED Section Training Program Manager. It is expected that discussion with the Training Owner will occur that the beginning and after the review of the draft materials. Final comments will be provided to the Training Owner for incorporation or discussion. The HRED Section Training Program Manager will give approval to the Training Owner to proceed towards training material finalization or require more work and improvements to the proposed training session for further review and consideration.

- Final Training Module and Material Development- the Training Owner makes the changes required by the HRED Section Training Program Manager and review committee (if used) and submits the final version to the HRED Section Training Program Manager for final review and approval. The HRED Section Training Program Manager will approve of the final training version or require additional changes.

- Train the Trainer- it may be necessary for the Training Owner and/or their training team to perform Train the Trainer sessions that will coordinate material delivery, timing, technical information and logistics. Internal and external training teams will practice and then perform a Train the Trainer session before a beta testing.

- Beta Testing- the Training Owner will coordinate a beta testing of the proposed training session depending upon the size, complexity and priority of the training session. The selected beta test group will critique the training session according to material delivery, and understanding, speaker delivery and other factors. Written comments should be provide to the Training Owner for improvement.

- Project Goes Live- congratulations you are ready to go!

There are three different but concurrent paths the Training Owner must manage for their training session to be successful. The first path is the actual implementation or presentation to the intended audiences. The second path is the Administration aspect in which trainings are given a document control number and attendees documented. The last, and often over looked path is how the training will be marketed. This action provides training outreach and awareness to the target audience for attendance.

<u>Marketing Considerations</u>

- Provide outreach to targeted audiences such as CDOT and/or Contractors/Consultants
- Use the HRED Section and HR/ED unit websites to advertise trainings; use CDOT intra email system for advertising
- Provide outreach to professional organizations like the Colorado Contractors Association
- Gain outreach support from internal CDOT organizations such as the Water Quality Advisory Committee and PDAC

- Generate CDOT regional outreach via emails, email broadcasts or personal phone calls for training sessions
- The development of a marketing plan is advisable depending upon the, size, sensitivity and priority of the training issue

Administration Issues and Considerations

- Coordinate with the HRED Administrative Assistant for all upcoming trainings requiring document control numbers, filing and certification requirements
- Training sessions and associated materials must be given a unique document control number and filed electronically; training revisions must have unique revision numbers and dates of revision
- Ensure certification requirements and associated "training-infrastructure" is managed within the training program budget
- The training database must contain the following information for all HRED Trainings at a minimum:
    - Name of training and attendees and sign in sheets
    - Date of training session
    - Topic of presentation
    - Test scores (if appropriate)
    - Registration database
    - Certifications and requirements (if appropriate)
    - Teacher evaluations (if appropriate)

Implementation Considerations and Requirements

The training implementation action is to deliver the training to the target audience at the scheduled training times. Implementation goes beyond this initial material presentation from one audience to another. The CDOT SWEMS concept of Plan-Do-Check-Act is orchestrated at this stage of the training life cycle. The following items must be performed by the Training Owner and HRED Training Program Manager:

- A Water Quality Training Program Rollout will be performed
- Revise training materials based upon changes to linkage documents
- Review trainer evaluations and material at least monthly; average scores should be 90% or greater
- Develop a survey to target audiences for course improvements yearly
- Review specific training session's success metrics at least quarterly
- Review training session, training materials and performance metrics annually
- The Training Owner will discuss success metrics and factors with HRED Section Training Program Manager annually; evaluate the need for adaptive management such a training session changes or additional resources
- Perform training session changes and obtain approval of all changes from HRED Section Training Program Manager
- HRED Section Training Program Manager performs periodic audits on training session metrics and reporting

- HRED Section Training Program Manager will develop an Annual Water Quality Training Program Report that will be submitted to the EPB Manager
- Continue the Plan-Do-Check-Act cycle throughout the life cycle of the training project and program

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Training Appendix D - Water Quality Training Program Standard Operating Procedure (SOP)

The purpose of this standard operating procedure (SOP) is to provide the CDOT managers and staff a reference guide and process on how to develop training programs. This new process is consistent with the CDOT Stormwater Environmental Management System (SWEMS) approach to develop training programs in an integrated fashion. This SOP is meant to provide an informal process for obtaining training approvals by the Hydrologic Resources (HR) and Ecologic Design (ED) Unit Managers, and the Hydrologic Resources and Ecological Design (HRED) Section Training Program Manager. The process will make the training originators think about their training programs in the following ways:

- Developing a well-defined objective and purpose statement
- Identifying the audience
- Adequately address training driver (regulatory or programmatic)
- Level of training competence is expected from the student
- Medium of training delivery (video, classroom, field, etc.)
- Training cost and funding
- Internal or external delivery
- Success metrics
- Integrate innovation and SWEMS principles

The process incorporates quality control (QC) actions to ensure training is being developed and delivered with high quality, while meeting training purposes and objectives. Discussions and final approvals from the HRED Training Program Manager is meant to avoid wasted effort and improve quality and efficiency.

Figure 1 of this SOP illustrates the HRED Training Program Process from conceptualization to marketing, administration and implementation. The use of the Plan-Do-Check-Act model is integral into the entire process, including training development and implementation. The training development process *must be followed* by all water quality employees who need to develop and deliver training sessions for environmental compliance and/or programmatic efficiency.

Training Drivers

There are two types of drivers that provide the incentive behind developing training programs; permit or audit based regulatory drivers and water quality or ecological program improvements that increase participation and program efficiency. The regulatory based drivers are described in Section 2.6 of the HRED Training Program Document. Since regulatory or policy changes may change these driver requirements over time, it is envisioned that regulatory established programs will change and improve over time.

Programmatic drivers are those that are intended to improve or enhance existing training and regulatory programs; for example, ESCAN training is not a regulatory requirement but training regional representatives on ESCAN elements and input mechanics will improve regulatory-based construction program reporting and overall compliance management. Overall these drivers create the need for water quality trainings.

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Training Appendix E
Water Quality Training Reference Index
(Under Development)

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Training Attachment 5B - Risk Tool

This training Risk Tool is used to decide the need a priority for training development.

RISK ASSESSMENT HRED TRAINING PROGRAM

Version 1 3/16/16

PROBABILITY OF NEGATIVE EVENT OCCURRING WITHOUT TRAINING
GREATER PROBABILITY

10

9

Example: Reactive to mission failure. Essential to fulfil the mission. Timing is somewhat flexible.

5 HIGH RISK

Example: Mission essential. Deadlines exist. Compliance with regulatory requirements.

7 HIGH RISK

Example: Essential to conform to regulatory requirements. Implementation needs to be instituted ASAP. Existing violations present.

9 VERY HIGH RISK

8

Driver: SWEMS trigger
Approval: HRED Training Program Manager

Driver: Regulatory
Approval: HRED Training Program Manager/DTD Management

Driver: Regulatory
Approval: HRED Training Program Manager/EMT

7

2 MEDIUM RISK

4 MEDIUM RISK

8 HIGH RISK

Example: Needs for customers evident. Timing is somewhat flexible. Not essential for mission fulfilment.

Example: Mission important. Very helpful to staff or customers. Timing is flexible.

Example: Mission essential. Compliance Schedules exist. Compliance with regulatory requirements. Mandatory or organization wide training is indicated.

6

5

Driver: Customer requests

Approval: HRED Staff discretion

Driver: Staff desire

Approval: HRED Staff discretion

Driver: Regulatory
Approval: HRED Training Program Manager/DTD

4

3

3 MEDIUM RISK

6 HIGH RISK

Examples: Like –to-haves, infrequently requested, not affecting Regulatory or Procedural Risk

Examples: Helpful knowledge, pertinent to mission but not essential to fulfil the mission

Examples: Essential to fulfil the mission. Timing is not flexible.

2

1

1 LOW RISK

Driver: Staff desire
Approval: HRED Staff discretion

Driver: Staff desire
Approval: HRED Staff discretion

Driver: Mission important
Approval: HRED Training Program Manager

0

1 2 3 4 5 6 7 8 9 10

DEGREE OF NEGATIVE IMPACT IF EVENT OCCURS WITHOUT TRAINING
GREATER IMPACT

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Training Attachment 5C – CDOT HQ Water Quality Training Survey and Responses (Component of Gap Analysis)

This training survey was sent to training recipents to see where training needs are still unmet. This was a critical part of the gap analysis.

HRED (Hydrologic Resource and Ecological Design) Trai

QUESTIONS

19 responses

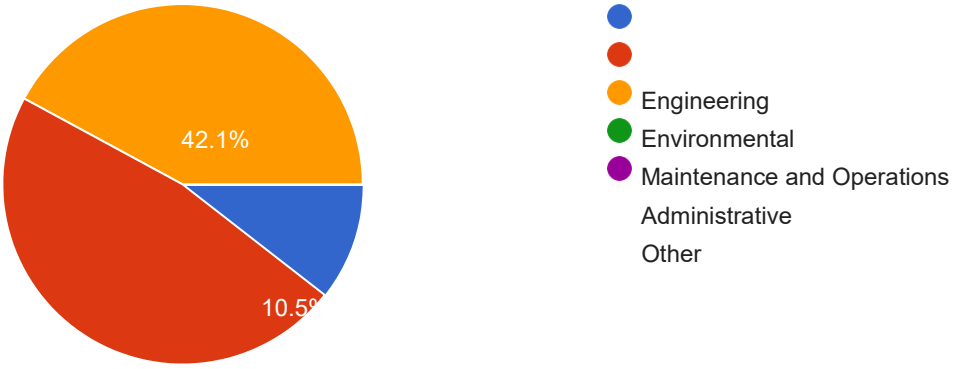
RESPONSES 19

SUMMARY INDIVIDUAL

Accepting responses

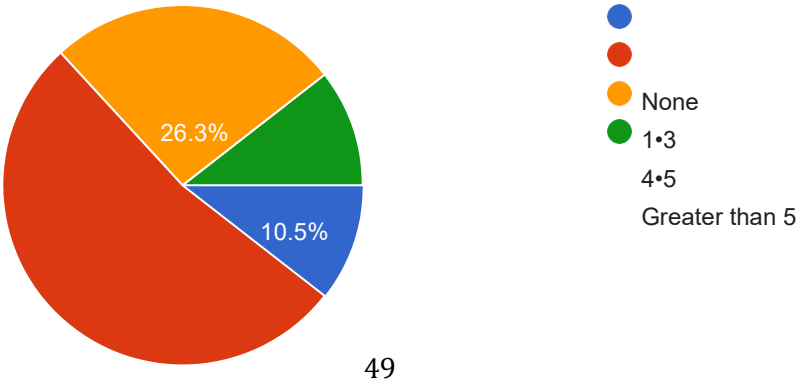
Which CDOT specialty area do you currently work within?

(19responses)

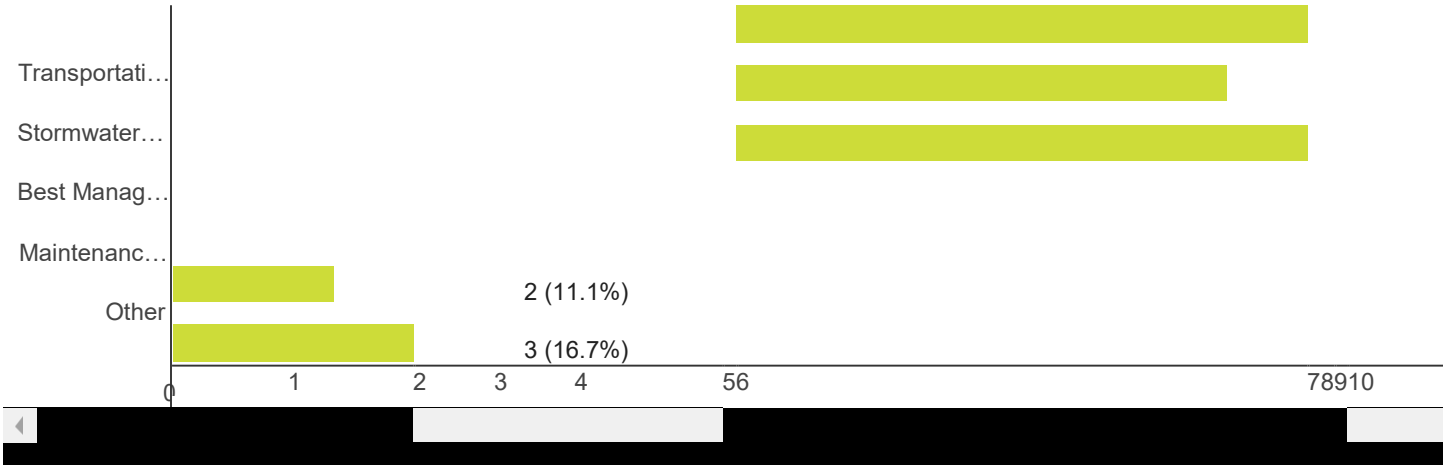


How many training sessions do you attend annually?

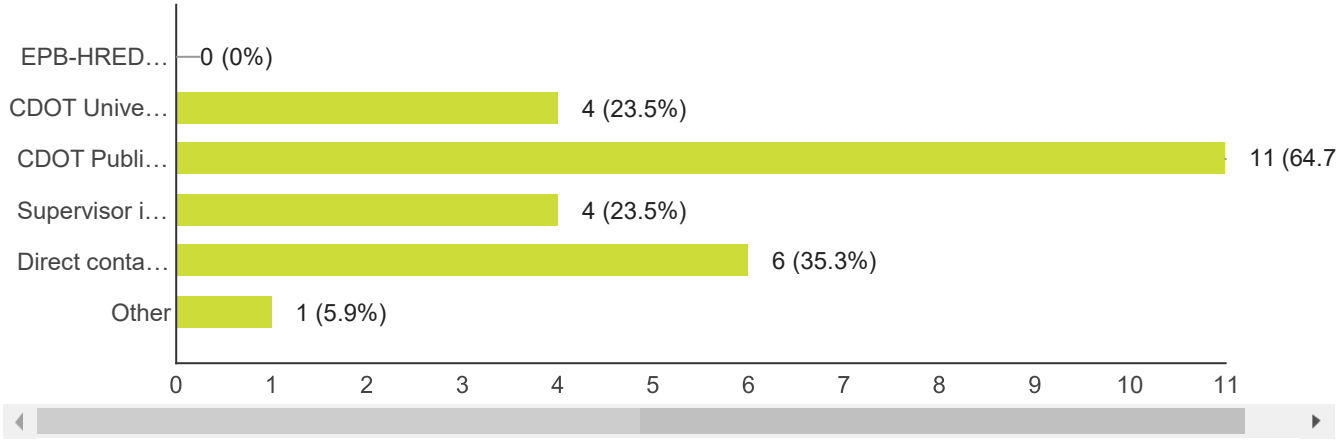
(19responses)



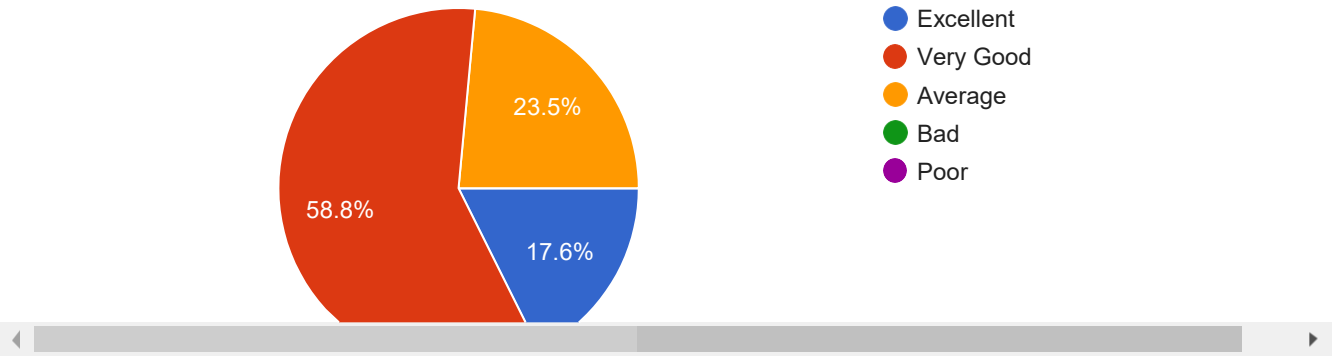
What CDOT Environmental Programs Branch (EPB)-Hydrologic Resource and Ecological Design (HRED) sourced classes have you taken in the past 2 years?
(18 responses)



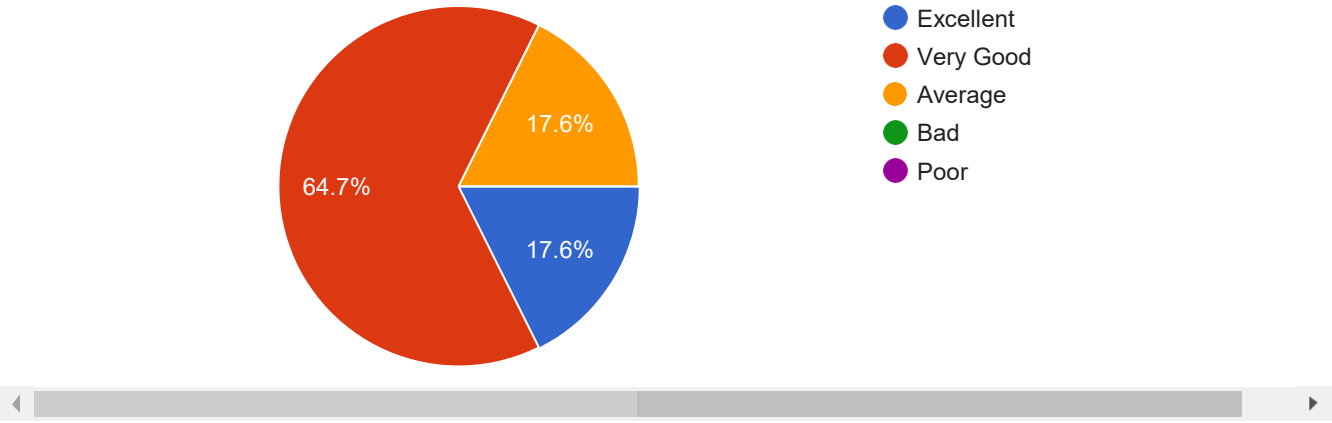
How do you 郝貌nd out about EPB-HRED courses offered? (17 responses)



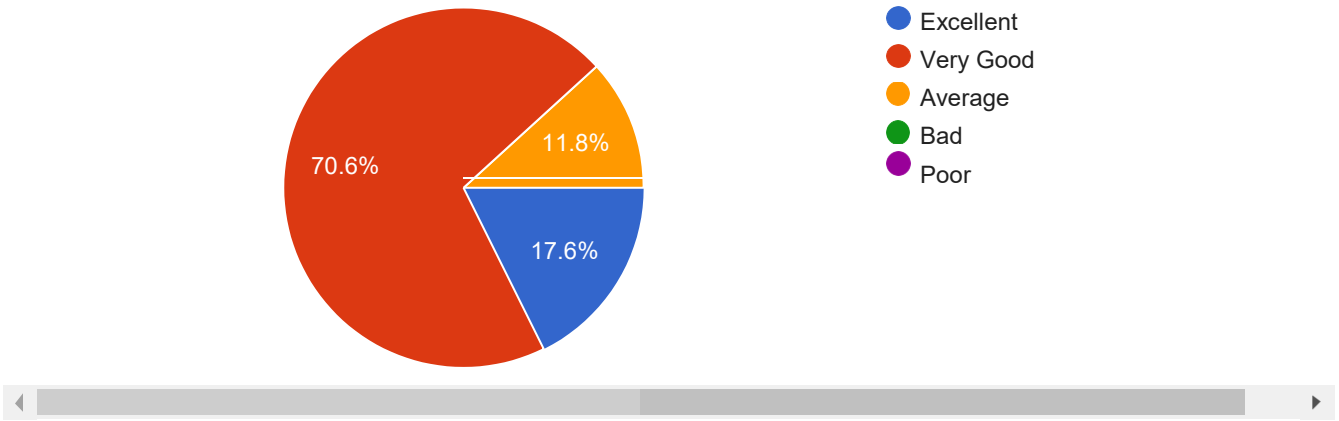
How would you rate the value of the training in assisting you with your job?
(17 responses)



How would you rate the quality of instruction of the EPB-HRED classes?
(17 responses)



Overall, how useful was the training content of the EPB-HRED classes?
(17 responses)



What additional training do you need from EPB-HRED to make your job easier and improve compliance?
(5 responses)

CM dealing with seeding installation and monitoring

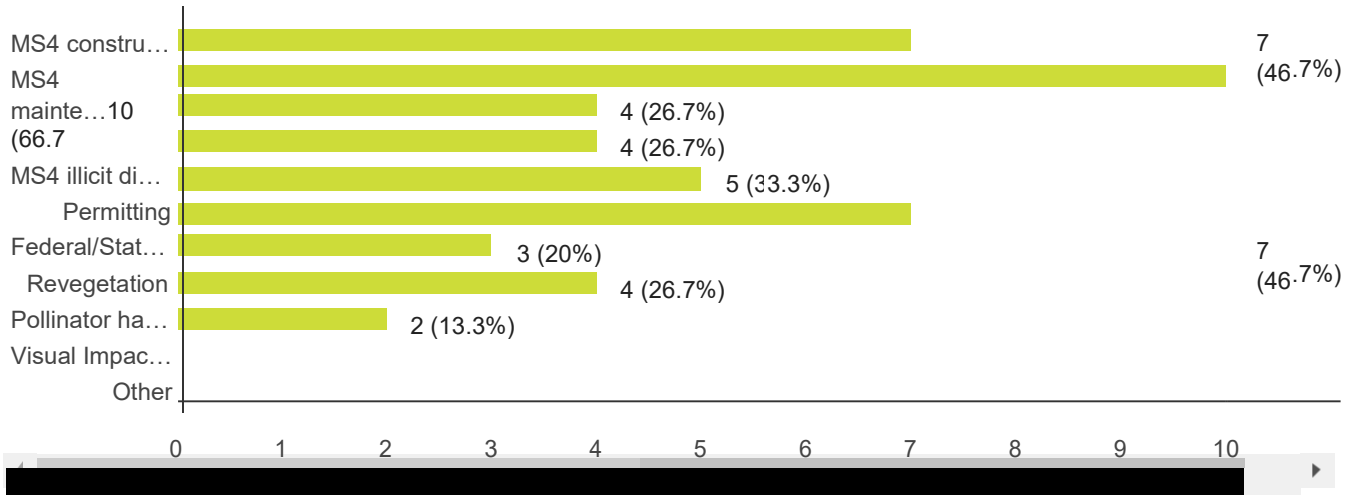
CM dealing with seeding installation and monitoring

May need to add training on Landscape Establishment Period processes once the process is better defined.

Implementation of new Specs.

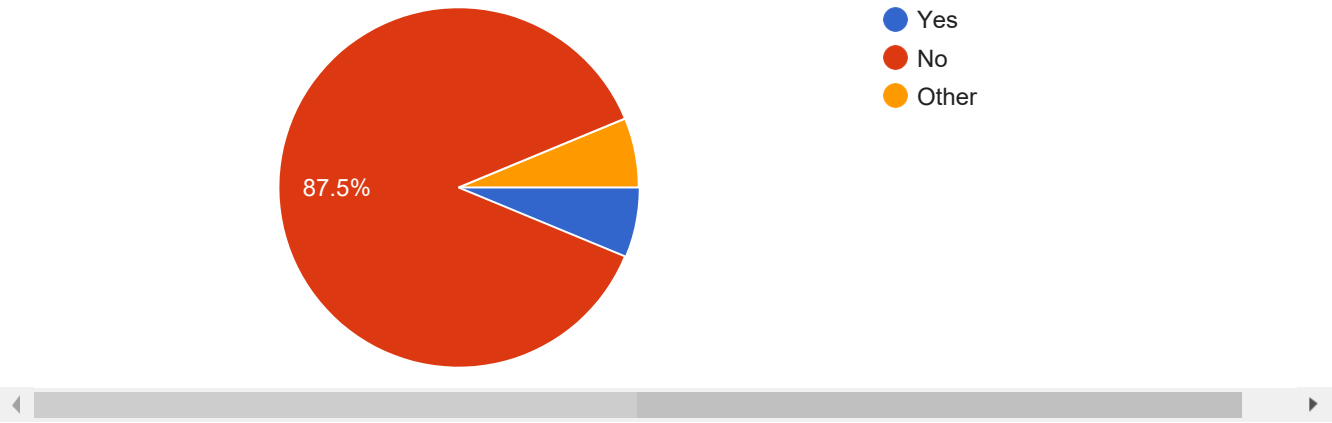
When new WQ related specs or design items come out it would be nice to have a training/overview of those changes, at least on major rollouts

In your opinion, what EPB-HRED areas need additional training for regional implementation?
(15 responses)

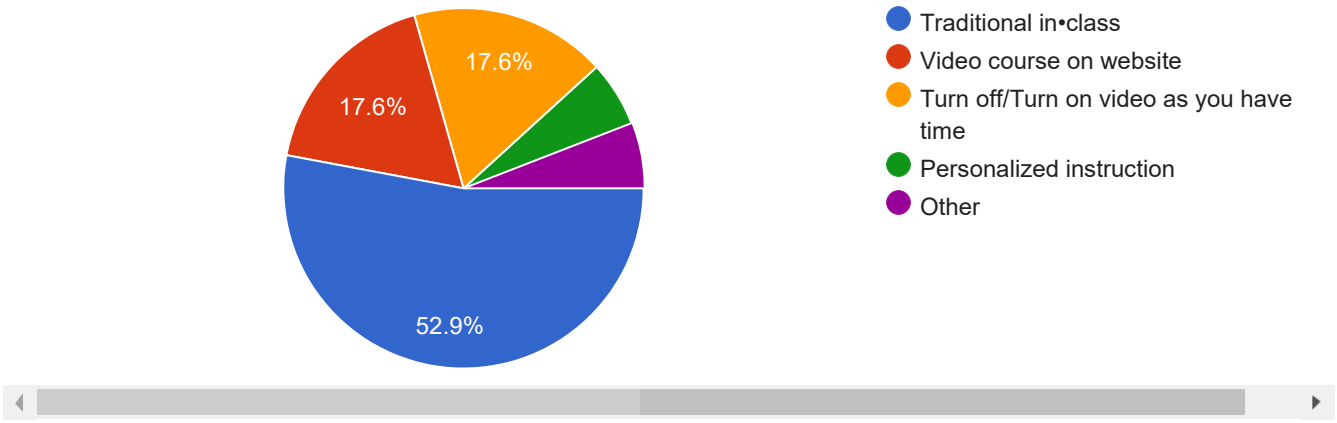


Is there an adequate mechanism to ask questions and gain additional clarification on training issues? (16 responses)

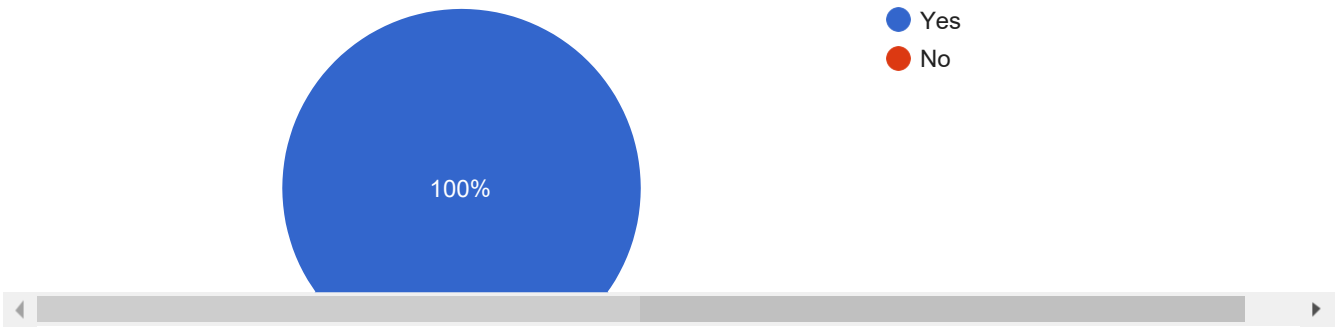
Are EPB-HRED training courses too long? (16 responses)



What type of training do you prefer? (17 responses)

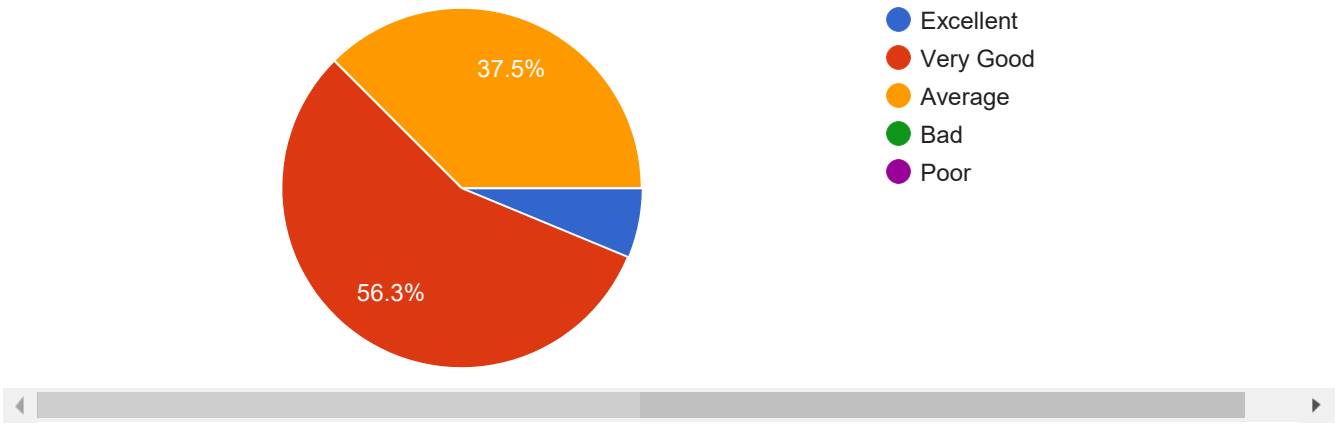


Is the level of testing adequate for the training provided? (16 responses)



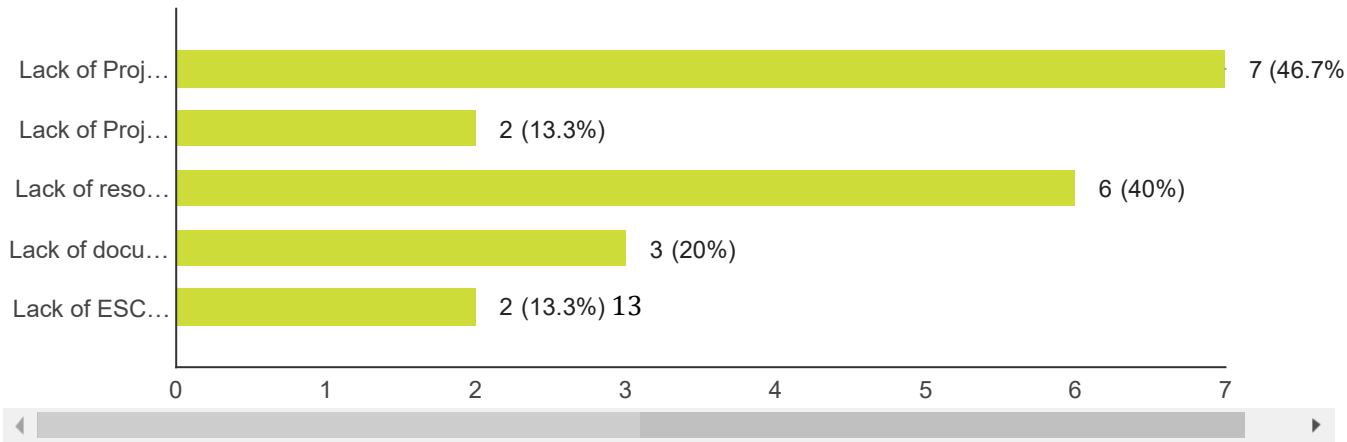
How would you rate the responsiveness of EPB-HRED to your training inquiries and follow up for help?

(16responses)



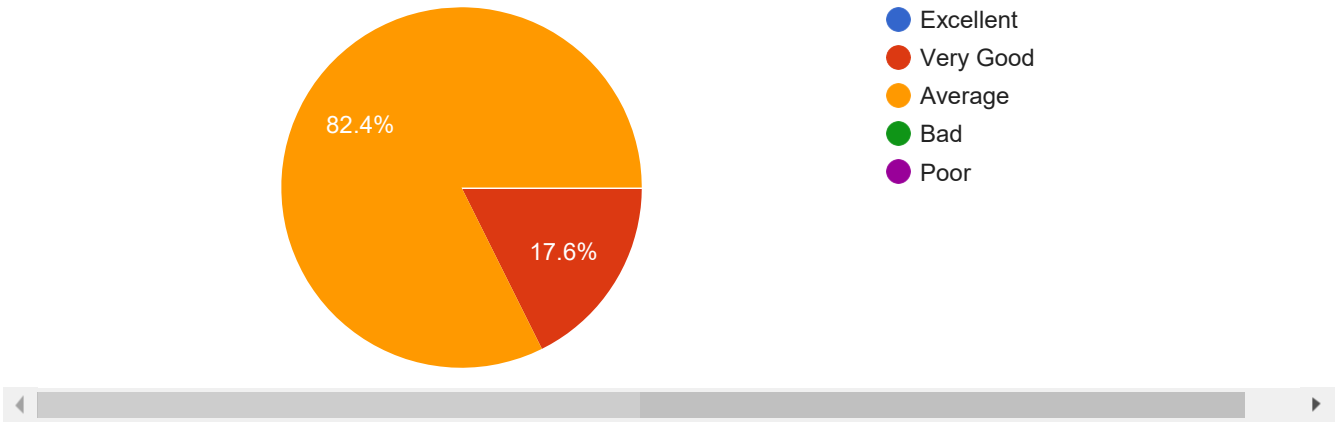
What areas represent the biggest water quality compliance risk and challenge to CDOT regions?

(15responses)



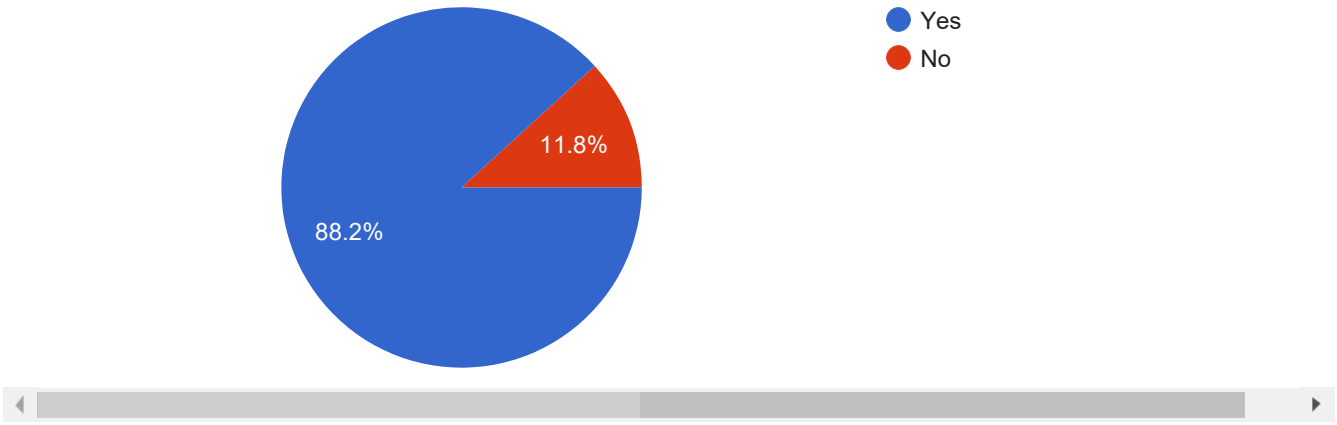
How would you rate the level of understanding from your prime contractors on water quality and landscape issues?

(17responses)



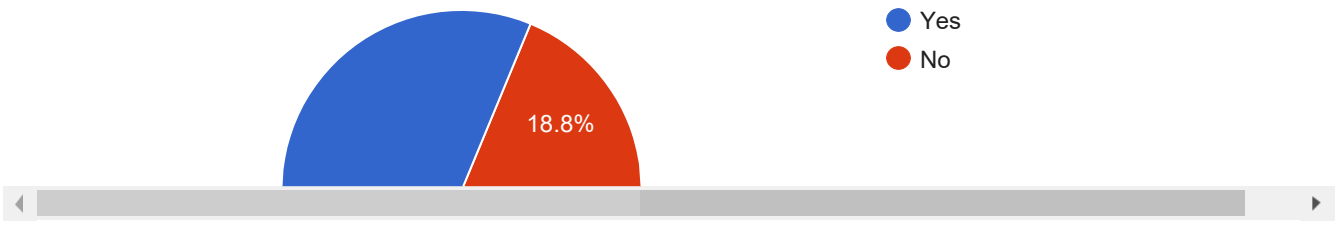
Do you get support from your supervisor to attend training?

(17responses)

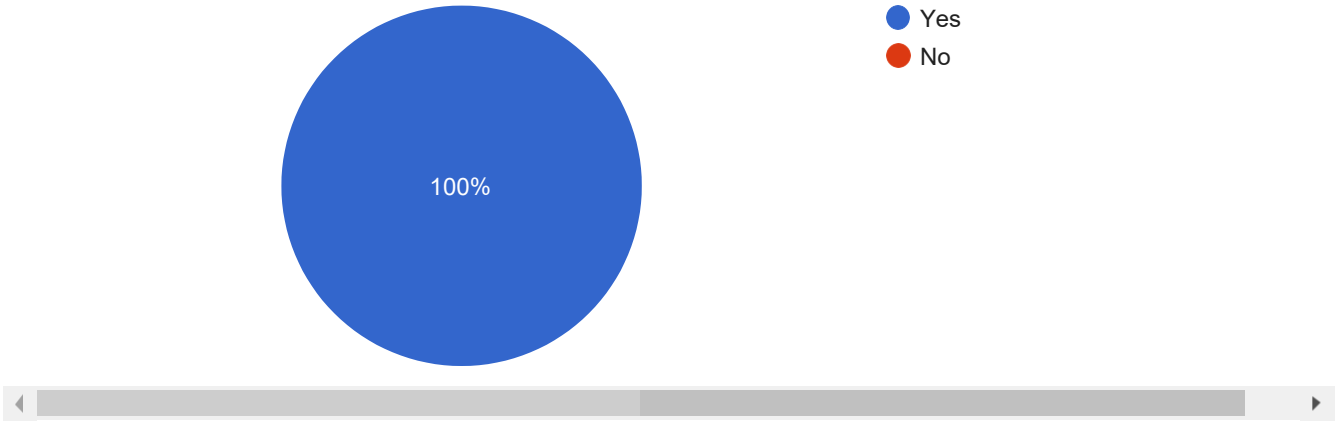


Do you get support from your supervisor to attend EPB-HRED training?

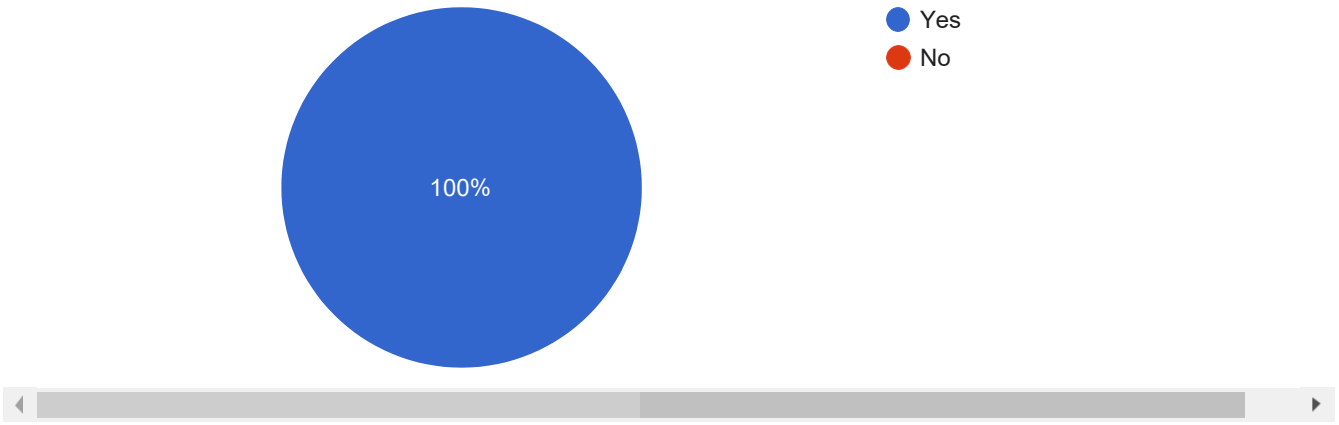
(16responses)



Are teacher and course evaluations routinely offered to students during/after training?
(16 responses)



Do the EPB-HRED course descriptions meet the content of the course?
(16 responses)



What additional information does EPB-HRED need to know to improve our training curriculum?

(4 responses)

More videos would be nice

More videos would be nice

There needs to be a mechanism that can be followed up on once a project is turned over to maintenance so that permanent BMP's are maintained and inspected locally.

When new specs, standards, and templates are developed, adequate training is needed to ensure implementation.

Water Quality Training Appendix A – Training Curriculum and Schedules

HRED Trainings to Address EPA Comments

Training Session(s) Names	EPA Corrective Actions Addressed	Priority (1-highest-5 lowest)	Existing or Future	MS4 Program Owner(s)	Training Elements	How it Addresses Corrective Actions	Implementation Timing (Calendar Year)	Notes Remarks
Transportation Erosion Control Supervisor (TECS) Certification Class 1 & 2	**Required for 1CS** – The Standard Specifications do not require stop work orders to be issued for discharges to state waters or other egregious non-compliance instances. **3CS** – CDOT failed to follow the Standard Specifications procedure for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions that went beyond 48 hours. **4CS –** CDOT has no formal mechanism to address chronic noncompliance by contractors. **5CS** - Contractors' to meet Construction General Permit and Standard Specifications requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.	Existing 1	Existing	Construction Program	SWMP compliance and management; erosion control specifications; BMP operation and maintenance; field and lecture training; emphasis on site inspections and understanding of specifications	Students will be trained on construction site inspections and enforcement for compliance monitoring. New specification training will be included in the revised TECS Training. Improved contractor compliance will be achieved.	Implemented	Modification to Class 1 and Class 2 to address EPA comments; Class 1 is lecture based training; Class 2 field training based; 8 hours each; certification duration is 3 years. EPA representatives have attended these classes. The TECS curriculum will include Contining Education Modules that supplement the Goals and Performance Measures of the main class. Many of these modules will be electronic delivery and incorporate quizes and homework that once taken will extend the certification deadline by a number of months.
BMP Selection Training	**Required for 5CS** - Contractors' failures to meet Construction General Permit and Green Book requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.	Existing 1	Existing	Construction Program	Improve the hydrologic understanding of students leading to better SWMP BMP selection. Introduction to hydrology, examination of inlets & outlets, study of roadway ditches & shoulders, how to manage disturbance from construction, incorporation of permanent water quality ponds & sediment traps during construction, and how to best complete in-stream activity construction.	Ensure contractors as well as CDOT are in compliance with the Permit and the Green Book. This includes ensuring CDOT and TCES inspectors are trained on the requirements and enforce those requirements. Indicate in a response how CDOT intends to ensure compliance.	Implemented	
Stormwater Management Plan Preparer Course	**Required for 3PM and 5CS** – CDOT has not ensured training for staff on requirements of the MS4 permit and associated CDOT programs as necessary to achieve compliance with the conditions of the permit.	Existing 1	Existing	Construction Program	Students will enter the course with a strong understanding of how to create a SWMP. This course will utilize a lecture format with in-class exercises to reinforce standardization of CDOT process for SWMP development. There will be a certification exam at the end to the course. The course will be 2 days in length.	Ensure contractors as well as CDOT are in compliance with the Permit and the Green Book. This includes ensuring CDOT and TCES inspectors are trained on the requirements and enforce those requirements. Indicate in a response how CDOT intends to ensure compliance.	2016	
CDOT MS4 Programmatic Training (Introduction to CDOT PWQ & Construction Program)	**Required for 2PM –** CDOT Headquarters and Regional staff are not consistently aware of the requirements in the Stormwater Management Programs, and the Stormwater Management Programs are not being consistently implemented. **3PM** – CDOT has not ensured training for staff on requirements of the MS4 permit and associated CDOT programs as necessary to achieve compliance with the conditions of the permit. **4PM –** The Permit boundaries were unclear to several CDOT personnel.	1	Future	CDOT MS4 Program	Educate regional engineers, maintenance and water quality representatives about the MS4 programs and compliance expectations. Permit boundaries will be a topic of training.	Identifies MS4 compliance expectations for all MS4 programs with a focus on Construction and Permanent Water Quality Programs. Promotes a common understanding and approach for permit compliance, ensures CDOT Headquarters and Regional staff are trained on the requirements of the MS4 permit and associated CDOT programs. Training ensures consistent CDOT Headquarters and Regional staff implementation of Stormwater Management Programs statewide.	2017	Roster of attendees will be placed in a database and submitted to EPA and CDPHE; training will be conducted at regions by CDOT MS4 Program Manager and staff; safety training will be required for all CDOT water quality personnel
Water Quality and Erosion Control Specification Training (208 & 107.25)	**Required for 1CS** – The Standard Specifications do not require stop work orders to be issued for discharges to state waters or other egregious non-compliance instances. **3CS** – CDOT failed to follow the Standard Specifications procedure for several construction sites. **5CS** - Contractors' failures to meet Construction General Permit and Standard Specifications requirements were not identified by CDOT inspectors and a contractor Transportation Erosion Control Supervisor inspector during oversight inspections at CDOT construction sites.	1	Future	Ecological Design Unit and Construction Program	Provide an overview of current and new water quality based specifications that were developed based upon the new MS4 permit and EPA recommendations.	Improves regional and contractor understanding of new specifications in the field and for documentation; training discusses the initiation of liquidated damages and stop work orders. Training will address issuance of a stop work order for discharges to state waters and other non-compliance instances. Identification and action against non-compliance contractors will be taught to students.	2016	New specifications were developed in March 2016
Construction Program Description Document (PDD) and SOP Manual Overview and Compliance	**Additional Safeguard for 2CS** – CDOT failed to ensure compliance with the Construction General Permit, enforce according to the Standard Specifications, and implement sanctions for chronic failures at design-bid (and design build) projects. **3CS** – CDOT failed to follow the Standard Specifications procedure for several construction sites across Regions by failing to issue and collect liquidated damages for corrective actions that went beyond 48 hours. **4CS -** CDOT has no formal mechanism to address chronic noncompliamce by contractors as long as corrective actions occur within 48 hours. **5CS** - Contracotr's failure to meet Construction General Permit and Statndard Specifications requirements were not identified by CDOT and contractor inspectors during oversight inspections at CDOT construction sites.	1	Future	Construction Program	Provides training to regional CDOT water quality personnel on CDOT MS4-Construction Program to ensure compliance and uniform execution; process will be consistent with Chief Engineer memorandum and direction for MS4 compliance	New standard operating procedures for MS4 compliance to permit conditions and EPA Findings will be taught to CDOT regions. SOPs will provide on the ground water quality representatives a compliance reference for both field and office use.	2017	Regional based training approach with a more general program overview; PDD provides detailed training on process and procedures for compliance. Identified during gap analysis
PWQ Maintenance Training Certification	**Additional Safeguard for 1ND** – The inventory of CDOT permanent water quality features (PWQFs) was incomplete and inaccurate.**2ND** – CDOT does not have a complete list of PWQFs with Intergovernmental agreements (IGAs) and is not ensuring long-term maintenance or proper operation and maintenance of PWQFs with IGAs.**3ND** – CDOT was not ensuring long-term maintenance of PWQFs.	1	Future	PWQ Program	Covers inspection, maintenance and documentation of PWQ Control Measures. Includes a basic certification training to maintenance personnel that may encounter PWQ CMs or assist in maintaining PWQ and advanced certification for maintenance personnel responsible for maintaining inventory.	Ensures proper long term maintenance and management of permanent water quality control measures by teaching proper procedures surrounding database inventory, inspection and maintenance practices.	2017	
PWQ Drainage Design Review Certification	**Additional Safeguard for 3ND** - CDOT was not ensuring long-term maintenance of PWQFs.	1	Future	PWQ Program	Covers proper design and design review for PWQ CM to ensure PWQ CMs meet CDOT MS4 permit and Design Standards, provide safe access for maintenance personnel and can accommodate CDOT specific equipment.	A key component is to ensure that PWQ CMs are designed to ensure long term operation and maintenance by designing for CDOT equipment and ensuring safe access.	2017	
FRCP Training	**Required for 1PP** – CDOT maintenance facilities were not fully implementing facility runoff control plans (FRCPs), updating or amending FRCPs, and FRCPs did not address all required items. **2PP –** Provide EPA with a response indicated how CDOT will ensure the most recent updated FRCP is on-site.	4	Existing	Pollution Prevention Good Housekeeping	Improved Housekeeping and understanding proper control measures to keep CDOT in compliance with all regulatory requirements. This course can be shortened to 1 hour. However 1.5 Hour PowerPoint Presentation with Q&A is Best. Training at MTA using SAP as tracking software and Certification.	CDOT Stormwater Permit COS#000005 (Part I.E.6.a. and Part I.E.6.b.) In Addition, 2015 EPA Audit of Maintenance Facility Runoff Control Plan (FRCP)	Implemented	
Illicit Discharge Training at CDOT Academy	**Additional Safeguard for 1ID –** CDOT does not have adequate legal authority for illicit discharges, as required to have been submitted with CDOT's permit application.	4	Existing	Illicit Discharge Elimination Program	Slight modification to training session to address legal authority to eliminate discharges into CDOT MS4 system	Training element will improve enforcement of discharges with legal consequences.	2016	